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Non-Communicable Disease and Development: Future Pathways

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December 2014

The IDS programme on Strengthening Evidence-based Policy works across seven key themes. Each theme works with partner institutions to co-construct policy-relevant knowledge and engage in policy-influencing processes. This material has been developed under the Policy Anticipation, Response and Evaluation theme, Tomorrow Today programme.

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Abbreviations

ART	antiretroviral therapy
ASHA	Accredited Social Health Activists
BDHS	Bangladesh Urban Health Survey
BMI	body mass index
CBHI	community-based health insurance
CD	communicable disease
CDC	Centers for Disease Control and Prevention
CVD	cardiovascular disease
DALY	disability adjusted life year
DECIT	Department of Science and Technology (Brazil)
DFID	Department for International Development
DSW	Department of Social Welfare (Ghana)
EPIC	WHO's tool to quantify global economic losses
FAO	Food and Agriculture Organization
FDI	foreign direct investment
GDP	gross domestic product
GHS	Ghanaian Cedi
HEF	health equity funds
HIV/AIDS	human immunodeficiency virus/acquired immunodeficiency syndrome
ICT	information and communication technology
IDS	Institute of Development Studies
IFBA	International Food & Beverage Alliance
IOTF	International Obesity Task Force
ISSA	International Social Security Association
L&MIC	low- and middle-income country
MDGs	Millennium Development Goals
MoH	Ministry of Health
NCD	non-communicable disease
NGO	non-governmental organisation
NSPS	National Social Protection Strategy (Ghana)
OECD	Organisation for Economic Co-operation and Development
OVC	orphans and vulnerable children
POVILL	Protecting the rural poor against the economic consequences of major illness: A challenge for Asian transitional economies
PRC	Prevention Research Centers
SAGE	WHO study on global AGEing and adult health
SES	socioeconomic status
STEEP	Social–Technological–Economic–Environmental–Political analysis
SUS	Sistema Unico de Saude
TB	tuberculosis
UK	United Kingdom
US	United States
USAID	United States Agency for International Development
WEF	World Economic Forum
WHO	World Health Organization
YLD	years lost due to disability
YLL	years of life lost

1 Introduction

1.1 Non-communicable disease: a development issue?

From a biomedical perspective, non-communicable disease (NCD) is not a new problem, particularly in the global North. However, awareness of the increasing burden from these conditions in low- and middle-income countries (L&MICs) has only recently emerged in the arena of development policy and practice (Beaglehole *et al.* 2011). In September 2011, the United Nations convened a summit on NCD, only the second such meeting ever to address a disease matter. However, despite a declaration reiterating the importance of NCD, few concrete actions emerged. The focus of the meeting was only on the conditions included in the World Health Organization's (WHO) core definition of NCD, diseases which share a defined set of individual-level risk factors and collectively constitute a substantial proportion of the disease burden: cardiovascular disease (CVD), chronic respiratory diseases, certain cancers and diabetes. Yet notwithstanding the Secretary-General's call to bring NCD into the broader global health and development agenda, alongside growing concern about the financial and social implications of premature deaths and morbidity from these conditions, the impression persists in some quarters that NCD is not a 'development problem'. Since some of the personal risk factors for these diseases are linked to lifestyle (in the case of the WHO core conditions, factors such as tobacco and alcohol use, physical inactivity and unhealthy diets), there is a tendency to retain a narrow medical and individual-level focus in conceptualising the problem and responses. In the case of CVD and diabetes, the link to obesity has made it all too easy to dismiss these NCDs as manifestations of overnutrition and 'greed' amongst the rich ('diseases of affluence'). In contrast, undernutrition is seen to represent 'real' need and by inference is proposed as the area more worthy of attention and intervention from donor agencies. In a more subtle rendering of this debate, the assumption is made that most non-communicable conditions are not true 'disease of poverty', as they are postulated to affect mainly people in higher wealth quintiles and living in urban areas.

There are significant gaps in the data concerning the burden of NCD in L&MIC, but emerging evidence is suggesting that the situation is rather more complex. The relationship between NCD and poverty, as well as data regarding wealth quintiles and urban–rural differentials, does not as yet support clear-cut conclusions. This report thus presents a case for viewing NCD as a development issue and one to be taken seriously for the post-2015 agenda. It assesses the implications of the growing evidence that across the global South, poor people face a rising prevalence of such illnesses and the associated disability (WHO 2010a), and are less likely to afford the expensive long-term medical and social care required. A diagnosis of chronic illness thus carries with it the spectre of deepening poverty, and for the most vulnerable poor, can be catastrophic. Indeed, Stuckler *et al.* (2010) argue that a failure to appreciate the relationship between NCD and poverty could reverse existing development gains and widen the inequalities between those who can and those who cannot cushion themselves against the effects. Moreover, poor households in L&MICs will increasingly face a double burden of disease, namely communicable and non-communicable. Health and social care systems will similarly face a double burden. NCD-related challenges at the level of public service provision are thus likely in future to become a source of growing political pressure on governments to address the risk that the majority of households face of having to bear a big financial burden when a family member falls seriously ill.

From a policy point of view, the situation has become too urgent and the implications too broad to bracket NCD as largely a health sector issue. A focus solely on individual risk factors and lifestyle modification cannot account for the reality that in settings of rapid urbanisation around the world, poor people face limited options for healthy food and lifestyle

choices. Conditions of life are as relevant as lifestyle (Whyte 2012). An understanding of the drivers of NCD that places the political economy of these conditions centre stage is necessary if we are to plan responses that take into account likely scenarios for the 'worlds' that people will inhabit as the century advances. A reframing of the problem as one requiring development attention could hold a key to mobilising greater political will. If a different kind of evidence which emphasises the broader nature of the challenges is considered beside public health data, this could stimulate creative thinking and connect policy options from across traditionally distinct domains. Different levels of response are also required, from patient self-management programmes and social protection for households, to human resource solutions in health systems, to governance of the corporate food industry (Monteiro and Cannon 2012) and transformation of agricultural policy (Wheeler 2011). There is a need for policy thinking to be integrated across these levels of response in order to address the broader upstream drivers of this kind of ill health, whilst also meeting the most vulnerable individuals' biological as well as socioeconomic needs.

On account of the variety of conditions that are also non-infectious but are not included in the narrow WHO definition of NCD, this topic incorporates a very wide area of study. There is dispute about the WHO definition and several of the large studies, such as on global burden of disease, include a wider range of NCD in the analysis. Whilst this inconsistency in what is included can be confusing, in practice the four core conditions that constitute the WHO definition do form a significant part of the disease burden in terms of mortality. However, it is argued that the exclusion of mental disorders from the WHO definition is a significant omission, particularly when considering morbidity from NCD (Prince *et al.* 2007). One could argue further that even the distinction between 'communicable' disease and that which is not is becoming increasingly blurred as research reveals interconnections between the two categories, such as cancers where infectious agents are part of the aetiology. The term 'chronic disease' is also confusing. It is not synonymous with NCD as some communicable diseases, such as HIV infection, are also chronic. In this report we do not use the term 'chronic disease' to avoid this confusion. Rather the concept of 'chronic lifelong illness' is discussed with reference to diseases that require lifelong intervention following diagnosis, be they infectious or non-communicable. Finally, in order to focus and make best use of the expertise available at the Institute of Development Studies (IDS), this project has narrowed down its remit to nutrition-related NCD (CVD and diabetes).

This project was first conceptualised following a meeting in May 2012 funded by the 'New Ideas in Development' initiative of the Development Studies Association. The meeting was convened by Hayley MacGregor and Linda Waldman and entitled 'Non-communicable Diseases and the Future of Development'. Key researchers across fields from within and outside IDS attended. In December 2012 funding was obtained from the Tomorrow Today sub-theme of the IDS Accountable Grant in order to convene a small group of IDS researchers to work within this project. Our challenge has been to bring together development thinking from across IDS to map out what a development perspective might add to policy debates on NCD responses. Our aim was to begin to address what we identified as a need for fresh policy on NCD in L&MICs and responses that are genuinely cross-sectoral and integrated at different levels. The emphasis of the project has been on identifying innovations targeting the requirements of poor people in such contexts. The work has focused on four thematic areas (health, social protection, governance and agri-food business), through combining knowledge of existing policy responses with a case study approach. The project team was chosen for the range of thematic expertise across development studies, as well as experience in different policy sectors. In addition, the work in the first two thematic domains has focused primarily on policy responses directed at the level of the individual and household (health and social protection), while the last two thematic domains have given attention to higher level policy questions for the national and global contexts (governance and overnutrition, and regulation in the agri-food industry). Foresight approaches were drawn upon to identify trends and future scenarios for L&MICs with respect

to NCD, and to catalyse thinking around new policy options through adapting the technique of 'wind tunnelling'.

The project has pursued the following objectives:

- To critically examine existing policy strategies in selected countries and identify innovative responses to the NCD burden with respect to nutrition-related conditions, particularly addressing the needs of poor people
- To draw upon Foresight approaches to explore the major challenges likely to arise in the future by mapping future scenarios and adapting wind-tunnelling techniques
- To catalyse joint thinking to identify and assess policy responses to address these challenges and to illustrate the potential contribution of a comprehensive and integrated development approach
- To effect shifts in assumptions that NCDs are not a development problem by underscoring the development implications of the NCD burden and its relevance to the post-Millennium Development Goals (MDGs) agenda.

The limited duration of this project has meant that it has not been possible to do an extensive and complete review of all relevant policy innovations for nutrition-related NCD in L&MICs, let alone in higher income contexts. Rather the team identified a few countries (South Africa, Ghana and Brazil) to focus on in greater depth in the respective thematic domains. These countries were chosen because interesting policy initiatives were known to be occurring. Moreover, in all of these countries a sizeable middle class is present, alongside significant ongoing levels of poverty and inequality. This was in keeping with the focus of this project on addressing the impacts of the NCD burden on poor people in particular. These countries are all facing demographic and epidemiological transitions, as well as the so-called double burden of communicable and non-communicable diseases that can threaten the sustainability of health and social care systems. In some instances, mutual learning and policy diffusion have already occurred between the countries, such as between Brazil and South Africa. The report is thus not a comprehensive review of policy, but aims to begin a critical discussion of current policy proposals and interventions and to widen the remit to include thinking from the development arena.

1.2 Methodology: adapting Foresight techniques

The project team comprised the following IDS Research Fellows: Hayley MacGregor (Team Lead); Spencer Henson (Globalisation); Andrés Mejía Acosta (Governance); Mark Davies and Keetie Roelen (Centre for Social Protection); Gerry Bloom (Health); Policy Influence and Research Uptake Officer, Jeff Knezovich; and Research Officers Steven Lally and Martina Ulrichs.

In order to conduct the Foresight approach a review of the Foresight methods on the government website (www.bis.gov.uk/foresight) led to a search for a specialist facilitator. Alun Rhydderch (School of International Futures) was recruited as a consultant to facilitate the Foresight approach through scenario mapping and wind-tunnelling exercises. A literature review was conducted that revealed that research on, and policy suggestions for, addressing the issue of NCD in L&MICs has had a strong public health focus. Therefore, the aim of the Foresight approach was to envisage alternative development pathways and approaches for prospective policy solutions to NCD.

1.2.1 Scenario development and STEEP analysis

In this early stage of Foresight scenario development, a STEEP (Social–Technological–Economic–Environmental–Political) analysis was carried out to identify key drivers of NCD. Drivers of change were identified on the basis of their capacity to influence the future scenarios that are constructed as part of the Foresight approach. The time frame under consideration was fixed in this case as the coming 20–30 years.

Fellows were asked to identify at least three drivers of change for each category of the mnemonic. Thereafter, the underlying forces or factors that may shift these drivers and other trends in one direction or another were also identified. Drivers of change were expressed succinctly using neutral language followed by a short description of how a driver might manifest itself in a future scenario (for the compiled list of all the contributions, see Annex 1).

The STEEP analysis served to frame the next step consisting of scenario-building. During the scenario-building, in order to prioritise the drivers of change, the ‘axes of uncertainty’ method was used to choose two axes (high impact, high uncertainty). The x-axis formed the geopolitical system (open or closed) and the y-axis formed new technology applications (centralised or distributed). The axes (see Annex 2) were then developed into four different possible future scenarios. Each of the four scenarios were then elaborated to assess (1) the level of impact each driver of change might have on the world over the next 20–30 years, and (2) the level of uncertainty associated with each driver of change.

1.2.2 Wind tunnelling

In preparation for the wind-tunnelling exercise, the IDS Fellows were asked to think about existing policies and key policy principles that have been proposed to combat NCD. Case studies of selected countries in each of the four thematic domains were used to identify national level policies. Fellows then selected the key existing policies for the wind-tunnelling exercise (see Annex 3). Given time constraints, this could not be a comprehensive wind-tunnelling exercise, which usually involves a workshop of several days. A limitation to the wind-tunnelling exercise was the fact that we did not have the resources in the project to do extensive review of all available policy responses. However, we looked in greater depth at pertinent case studies and drew on the existing knowledge of the IDS Research Fellows.

The wind-tunnelling exercise uses a matrix with the scenarios listed across the top of a table and selected policies listed down the left hand side (see our example in Annex 3). The scenarios built in the first exercise are then imposed as a set of contexts in which to consider the selection of policy options. At the start of the exercise, a discussion of criteria for assessing effectiveness of policies was undertaken. Secondly, wind tunnelling involved ‘running the policies through the scenarios’ by assessing how well the selected policies would fair in terms of effectiveness in each of the speculative future ‘worlds’ imposed by the scenario descriptions. Evaluation of the success of policies in the particular scenarios in turn was done with reference to the criteria for effectiveness outlined at the beginning.

The wind-tunnelling exercise forces participants to evaluate policy options in potentially inhospitable environments/scenarios. This militates against the temptation to assume that one’s policy preferences are necessarily robust or to only imagine future worlds that fit one’s own ideological biases. It is tempting to assume that a future world will be right for our favourite policy ideas to be effective and acceptable. The wind tunnelling encourages an approach that is more objective. However, the discussion that was catalysed amongst the team by the wind-tunnelling exercise made it obvious that team members had preferences for policies that would address poverty and provide safety nets for vulnerable households. It was hard for team members, coming from a development perspective, to not privilege for discussion policies that would assist in achieving an outcome that we agreed was most desirable. We accepted that the project had this normative framing, but also saw the value of the wind tunnelling in that it forced us to accept the probable reality of a future scenario in

many L&MICs that was challenging to our ideological positions and required robust policies and safeguards to work for poor people. We thus adapted the final wind-tunnelling discussion to take into account our aim to assess policy options in the light of normative assumptions about desirable future development pathways. This involved critically assessing existing policy proposals for NCD in the light of principles such as social justice and sustainability by posing questions such as who might benefit and who might lose through the implementation of different policy options. At the same time, the Foresight work balanced these objectives by highlighting the uncertainty of futures and the impossibility of 'fixing' the world and the drivers of change.

1.2.3 Workshop with IDS team and external invited participants

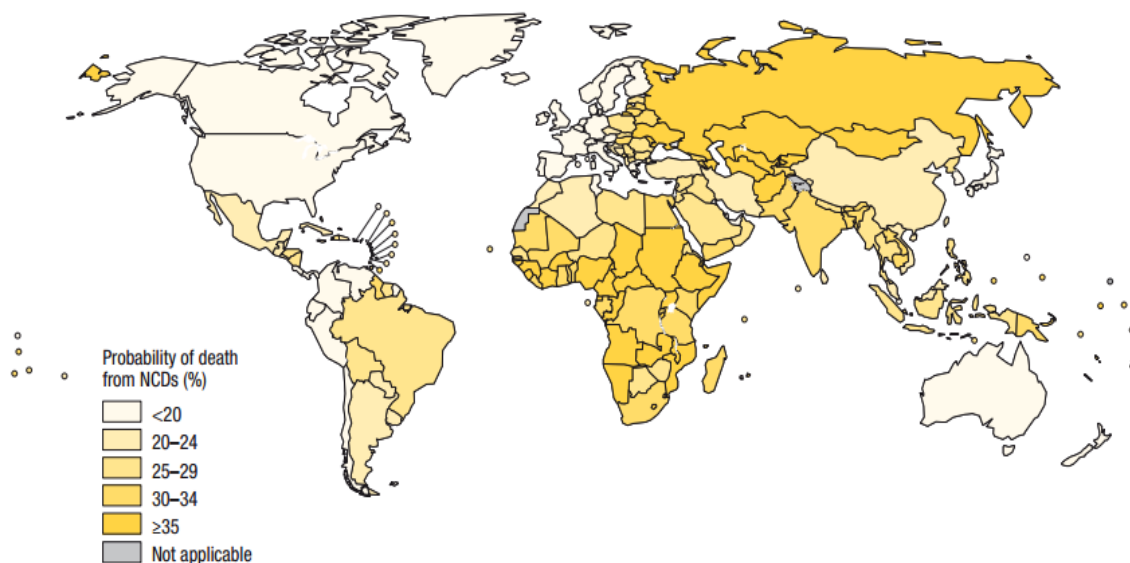
A workshop was held in December 2013 at IDS which involved other IDS Fellows as well as outside academics and a representative from the Department for International Development (DFID). A selection of the policy packages was presented by the IDS team for discussion, drawing on the horizon-scanning exercises. This workshop enabled further critical engagement with the policies that we analysed and assessment as to whether different perspectives had been adequately considered and integrated. The workshop informed the preparation of this report and the accompanying policy briefing (Knezovich and MacGregor 2014).

2 The background to the problem

2.1 A significant burden of disease

As life expectancy and population growth steadily increase globally and as the proportion of deaths due to infectious diseases has declined, so has the prevalence and burden of non-communicable disease. The idea that NCD is a problem largely of the global North and that these are 'diseases of affluence' is also coming under increasing challenge. In the twenty-first century, NCD is now accounting for more than half the mortality prevalence globally in so-called 'developing' countries alone. According to WHO (2011a), approximately 63 per cent (36 million) of global annual deaths are attributed to NCD with almost 80 per cent (29 million) of these deaths occurring in L&MICs. Of particular significance is that nine million of the deaths attributed to NCD are considered premature (<60 years of age), with 90 per cent of these occurring in L&MICs. The Global Burden of Disease Study 2010 found that two of the top three diseases resulting in years of life lost (YLL) due to premature mortality worldwide were NCDs. Furthermore, people aged 30–70 in sub-Saharan Africa, Eastern Europe and parts of Asia are at the highest risk of dying from an NCD (see Figure 2.1) (WHO 2012a).

Figure 2.1 Probability of death from an NCD between ages 30 and 70 (%), 2008



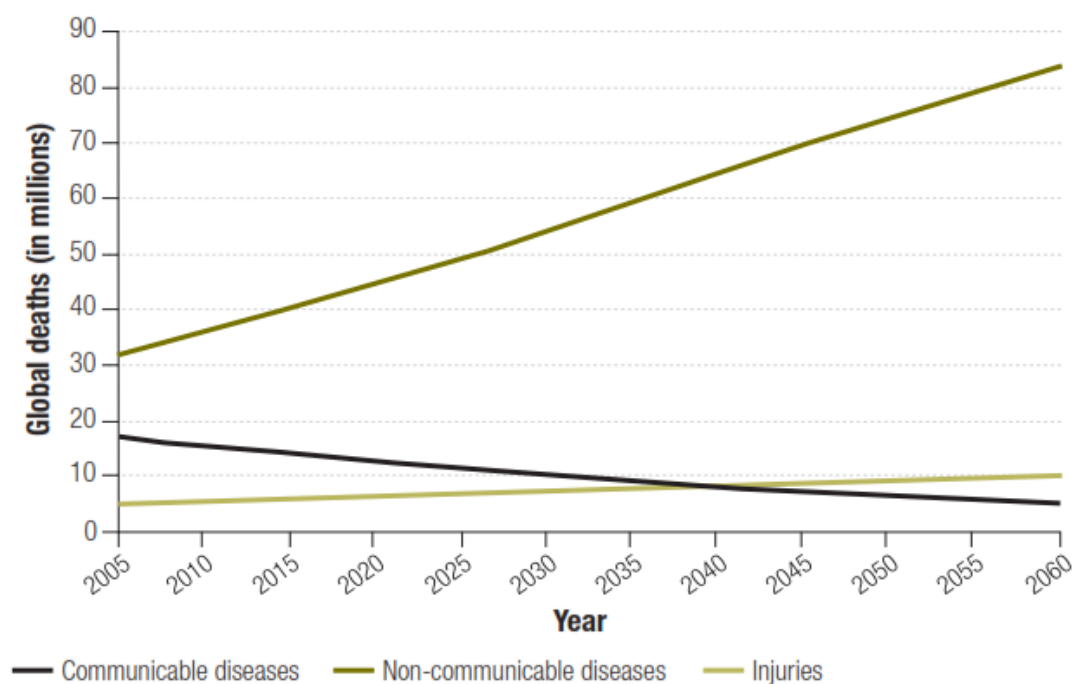
Source: WHO (2012a: 34).

The major risk factors associated with mortality and disability adjusted life years (DALYs) include malnutrition, poor water supply, sanitation and hygiene, unsafe sex, tobacco use, alcohol use, occupation, hypertension, physical inactivity, illicit drug use and air pollution (Murray and Lopez 1996). NCDs account for 48 per cent of the healthy life years lost – DALYs – worldwide (versus 40 per cent for communicable diseases, maternal and perinatal conditions and nutritional deficiencies). NCD causes substantial morbidity worldwide and accounts for one-third of DALYs in low-income countries and for nearly two-thirds in middle-income countries. In Africa, where NCD-related morbidity is lowest, these conditions still account for 21 per cent of DALYs (WHO 2008). Significantly, neuropsychiatric conditions contributed to 28 per cent of the NCD (an expanded definition is used here) DALYs in

middle-income countries and 26 per cent in low-income countries in 2005, with signs of a slight reduction by 2030 (Prince *et al.* 2007).

Shifts in the global burden of disease have been evident for some time. In a study by Hughes *et al.* (2011), an International Futures modelling system was developed in order to update pre-existing estimates (Murray and Lopez 1996) in global health forecasting and also allow longer-term estimates further into the current century. As shown in Figure 2.2, the authors forecast a reduction in communicable diseases (CDs) as causes of deaths and an increase in NCD-related deaths, which were the major cause of death in 2005. Currently at approximately 18 per cent of global deaths, the model forecasts CDs will reduce to 10 per cent (40 per cent reduction) by 2030 and to 5 per cent (70 per cent reduction) by 2060, in spite of a substantial growth in population. According to the authors, this is consistent with historical patterns of progress against combating most CDs, though there remains considerable uncertainty regarding the pace of progress towards the reduction in HIV/AIDS and malaria. Over the same period into the future, from 2005 global deaths due to NCDs are forecast to increase to 55 per cent (a 60 per cent increase) by 2030 and to 94 per cent (a 260 per cent increase) by 2060. Even in sub-Saharan Africa, this model forecasts that the balance of deaths will shift towards NCD by around 2030; by 2060 it is predicted that deaths from NCDs will outnumber deaths from CDs by more than five to one in sub-Saharan Africa. These shifts reflect changing age-specific death rates and an older population.

Figure 2.2 Global deaths by major disease groups



Source: Forecast from the International Futures mode; used with permission of Frederick S. Pardee Center for International Futures, University of Denver (pardee.du.edu).

The United Nations (UN) High Level Meeting on Prevention and Control of Non-communicable Diseases held 19–20 September 2011 in New York has been the only major one of its kind to focus on the NCD burden, but it is only the second time that a meeting of this kind has been held to discuss a disease issue (the first such summit aimed to address HIV/AIDS). However, despite a declaration reiterating the importance of NCD and the link with poverty, few concrete actions emerged and there was additional dissatisfaction amongst interest groups regarding the narrow definition of NCD. Nonetheless, the meeting was a staging point to begin to catalyse a response to the global NCD burden. Significantly

also, recognition was given to the link between the NCD burden and questions of human development. The declaration thus frames the emerging evidence exploring the relationship between NCD and socioeconomic development and poverty, and underscores the importance of considering this issue for the post-MDG agenda.

It is noteworthy that NCD did not feature in the set of MDGs. Indeed, in a study by Stuckler *et al.* (2010) using data from 131 countries, it is argued that delays in progress towards achieving the health-related MDGs for infant and child mortality and tuberculosis can be significantly associated with the burden of adult NCD as well as HIV prevalence among adults aged 15–49. Thus the authors assert that the shortfall in achieving the MDGs by 2015 is indirectly and directly impacted by the NCD burden that L&MICs now face. The analysis centres on factors such as reduced household resources (human and financial capital) due to disease and co-morbidity between conditions. This in turn restricts earning potential and undermines the resilience of households and the ability to provide for children. High rates of adult NCD morbidity and mortality have been shown to result in loss of care providers and sustained disability, which prevents good health in children and also from receiving diagnoses and completing the course of treatment for CDs (Stuckler *et al.* 2010).

These data represent the effect of the double burden of communicable and non-communicable diseases in L&MICs. There is also a growing recognition that co-morbidity (experiencing more than one health condition simultaneously) and other factors mean that different disease epidemiologies can be evident in different geographic locations, so that the effect of the disease burden is different. For example, in contexts with a high burden of HIV and concomitant use of antiretroviral therapies (ARTs) (which affect individual metabolic profiles), alterations in the clinical manifestation of NCDs such as diabetes is raising new questions (Bloomfield *et al.* 2011). Antiretroviral treatment has been associated with increased risk of hyperlipidaemia (Segarra-Newnham 2002), diabetes and hypertension (Diouf *et al.* 2012).

The issue of co-morbidity in the burden of disease is an important area to foreground, not only because of physiological effects as described above. Mental disorders have been excluded from the WHO core definition of NCD and there are good reasons to flag concern about this. Mental disorders increase risk for CDs and other NCD, and contribute to unintentional and intentional injury. Conversely, many health conditions increase the risk for mental disorder, and co-morbidity complicates help-seeking, diagnosis and treatment, and influences prognosis (Prince *et al.* 2007). In 2004, depression was shown to be the third leading cause of the global burden of disease with 4.3 per cent of the total DALYs (WHO 2008). With this rate of progression, by 2030, depression is projected to be the leading cause of disability worldwide accounting for 6.2 per cent of total DALYs (WHO 2008).

2.2 Conceptualisation of risk factors and drivers

The epidemiological data thus points to the fact that NCD is now one of the leading causes of death and disability worldwide and is estimated to cause over three-quarters of all deaths in 2030 (WHO 2008). Disaggregating this burden of disease further, the highest rate of mortality globally is currently attributed to CVD (for example, heart attacks and stroke) with 17 million deaths annually in 2004 (75 per cent of which occur in L&MICs), followed by cancer (7.6 million in 2004), respiratory diseases (4.2 million), and diabetes (1.3 million). It appears that diabetes is growing rapidly and its impact in the future may be much larger. These four groups are the ones singled out by the WHO in its definition of NCD and account for around 80 per cent of all NCD deaths. In addition, all of these conditions are attributable to four modifiable behavioural risk factors: tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diets (excessive salt, fat and refined carbohydrate intake, and inadequate consumption of fruit and vegetables) (WHO 2011a). These individual-level risk factors are linked to physiological states and clinical signs such as obesity, hypertension, high blood glucose or raised lipid levels. At the molecular level there is also current research

on the genetic, epigenetic and uterine factors that can place an individual at risk of developing metabolic states in later life that are linked to NCD. In particular, there has been an interest in the relationship between malnutrition and later NCD, a connection that has started to crystallise a notion of intergenerational risk of NCD. Infants born to women who experience malnutrition during pregnancy are at increased risk of CVD later in life (NCD Alliance 2011), with higher birth weight associated with a lower risk of subsequent ischaemic heart disease (Huxley *et al.* 2007). Low birth weight is also implicated as a risk factor for diabetes, although the shape of that association needs to be examined further (Whincup *et al.* 2008). On the other hand, excessive weight gain or maternal obesity during pregnancy has been associated with obesity in children, although evidence is inconsistent (Fuster and Kelly 2010).

These individual-level physiological and lifestyle-related risk factors have been linked to higher level changes or 'drivers' such as urbanisation, migration and the globalisation of 'modern' diets and lifestyle, changes that are linked to an acceleration of an NCD 'epidemic' (World Bank 2011). With just over 50 per cent of the world now living in cities, and with the percentage of the global population over 60 years of age expected to double by 2050 (United Nations DESA 2009), the demographics of the world are changing. The effect of the epidemiological transition has already been described.

Globalisation is invoked in the account of the rising NCD prevalence owing to the spread of the multinational food industry and changing food and soft drink consumption patterns. That said, it is important to also consider changes driven by food processing and manufacturing in general and the ways in which local industries are involved alongside the blame that is directed at multinational companies. Changing diets as well as increased consumption of animal products in parts of the world experiencing rising incomes and a growing middle class are seen as significant. Whilst changing consumption patterns might be linked to 'overnutrition', it is important to recognise that consumption of excessive calories of poor quality might lead to obesity. However, a nutrient deficiency could mean that such individuals could in fact also be classified as malnourished.

Currently numbering 21 globally, megacities span the globe and have led to the formation of densely populated metropolitan areas, with more projected to grow (United Nations DESA 2011). The individual-level risk factors for NCD may be exacerbated by living in cities due to decreased availability of safe, green spaces for exercise and recreation, increased exposure to mass marketing, and the availability of cheap but unhealthy food (Smith *et al.* 2012). The narrative around urbanisation as a driver thus points to lifestyle change such as less physical activity, less likelihood that people will grow and prepare their own food and a greater reliance on processed and convenience foods. These are often poor quality but provide a source of cheaper calories such as refined carbohydrates, unhealthy fats and sugar. The transition of moving from rural to urban environments can greatly impact health with economic position likely determining dietary intake. At the far-end of the scale, families living in the poorest circumstances may face undernutrition. Yet the double burden of disease can manifest even within the same household. For example, a spatial analysis of urbanisation, migration and CVD risk factors in China indicates that improved standards of living and life expectancy resulting from rapid rural–urban migration are countered by an increase in CVD risk factors (Adamo *et al.* 2010).

Blaming urbanisation for the rising NCD burden can be simplistic. Urban living is increasingly a choice for many and thus the debate needs to shift towards considering how health in urban settings might be achieved. The emphasis on urbanisation and the link to NCD can mean that a more complex picture around rural–urban differential in disease burden is easily overlooked. Some rural contexts have urban 'pockets' where the same lifestyle factors apply as in classic urbanised settings. People living in rural environments in L&MICs also face disadvantage in terms of morbidity and mortality rates from NCD compared to high-income

countries. Joshi *et al.* (2009) maintain that the rate of mortality from CVD for adults <65 years of age in rural Andhra Pradesh, India, is 41 per cent, while in the United States (US) it is only 17 per cent for the same age group. An evidence base that defines new models of chronic disease care tailored to the unique circumstances of rural India needs to be developed.

A study by the POVILL programme at IDS (Ding *et al.* 2011) showed that poor rural Chinese households in two provinces had a skewed population distribution, with most of the population of working age having emigrated from these rural areas. This placed a large health burden for the remaining elderly population with more than ten per cent of households being affected, and eight per cent of people having more than one NCD.

In conceptualising risk factors and drivers of NCD, it is important to maintain a more nuanced approach that goes beyond blaming factors such as urbanisation or globalisation. These are realities likely to shape future scenarios in many parts of the world, and drawing on approaches that frame the problem as a need for 'healthy' urbanisation and global and local food manufacturing might open up alternative thinking regarding policy responses.

2.3 The relationship between NCD and poverty

In his address to the UN summit on NCD, Ban Ki-moon outlined the key aspects of the relationship between poverty and NCD by stressing the greater impact of such illness on poor households. With the earlier mortality and earlier and higher disability from NCD in L&MICs, the effect on loss of income for households through restricted earning potential is significant. This is both from the death or incapacity of members who were still economically active, as well as because other household members might have to stop work to provide care. In contexts where there is poor access to health care, the progression to disability due to late diagnosis and inadequate treatment is faster. If people have to pay out of pocket for health care, this can quickly lead to a downwards spiral into poverty.

2.3.1 Household expenditure and NCD

In general, compared with rich countries, poor countries have larger out-of-pocket expenses and higher fractions of health costs borne by patients themselves (Gottret and Schieber 2006). Thus in L&MICs – even for those which have escaped severe poverty – impoverishment can reoccur when people are faced with large, lifelong out-of-pocket expenses. Studies by WHO in 42 countries have shown that 2–3 per cent of households face catastrophic health care expenditures and that 1–2 per cent are pushed into poverty when they become sick. For those in near-poverty, the high cost of NCD care can plunge households into impoverishment, if care is sought at all (Sabri 2007; WHO 2009). These findings have been demonstrated elsewhere in developing contexts including Vietnam (Van Minh and Tran 2012); India (Binnendijk, Koren and Dror 2012); China (Li *et al.* 2012); Brazil (Barros, Bastos and Dâmaso 2011); and Ghana (Togoe 2013).

In India, NCD has been assessed to generally incur significantly higher treatment costs (about double) in terms of out-of-pocket expenditures than other conditions, and hence implied a higher financial risk on affected individuals and households (Mahal, Karan and Engelgau 2010). About 40 per cent of household expenditures for treating NCD were financed by households, with distress patterns such as borrowing and sales of assets suggesting that the economic burden at the household level is increasing. The amount of out-of-pocket expenditures attributable to NCD treatment during 12 months in 1995–6, and again in 2004 was estimated to have increased from 32 per cent to 47 per cent, suggesting a growing importance of NCD in terms of their financial effect on households (Mahal *et al.* 2010). In addition, the impoverishing effect of hospitalisation caused by NCD had a similar pattern to catastrophic expenditures, which was much more common for those with NCD-related hospitalisations than for those with hospitalisations caused by other conditions.

Mahal *et al.* (2010) estimate that in India if NCD was completely eliminated, estimated gross domestic product (GDP) would increase by 4–10 per cent.

The POVILL study (Ding *et al.* 2011) in China has demonstrated how migration of younger family members to urban areas had shifted the health burden. The insurance scheme for rural patients did not cover outpatient costs for chronic diseases, which placed a significant burden on these rural households. This study suggests that productivity losses resulting from NCD often pose a more serious threat to household livelihoods than health expenditure.

Elwell-Sutton *et al.* (2013) conducted a cross-sectional study on 30,499 Chinese adults aged ≥ 50 years which showed that people on low incomes were able to access treatment for acute conditions whilst their access to treatment of 'chronic' conditions was restricted. Income distribution accounted for only part of observed inequality in treatment of NCD, with other contributing factors such as health insurance, education and longest-held occupation. However, over 50 per cent of those in the lowest household income group had no insurance at all compared with less than 10 per cent in the highest income group. The contribution of insurance coverage to inequalities in utilisation was limited to treatment for chronic conditions, and did not apply to general health care utilisation. People on low incomes without access to insurance were still able to see a doctor and be admitted to hospital; however, a lack of insurance reduced the likelihood of being treated for an NCD.

A recent review suggests that there are inadequate or non-existent mechanisms to protect households financially from the burden of NCD in L&MICs. Furthermore, poor households are more likely to suffer disproportionately from the financial effects of this lack of social protection (Kankeu *et al.* 2013). This can have severe consequences for households including the use of insecure loans (often with very high interest rates), depletion of savings or selling household assets to cover the costs associated with NCD. In 'developing' countries, up to 34 per cent of household income has been shown to go towards associated costs of treating NCD. The burden for hospitalised care is much higher, reaching 158 per cent of household income in the three months after being hospitalised for a stroke in China (median was 57 per cent), with evidence that people go into debt to meet these costs. Despite the use of different cut-off points for defining financial catastrophe, the risks of suffering financial catastrophe as a result of out-of-pocket health payments is consistently higher for households with NCD in 'developing' countries (WHO 2011b).

2.3.2 Socioeconomic status and NCD disease burden

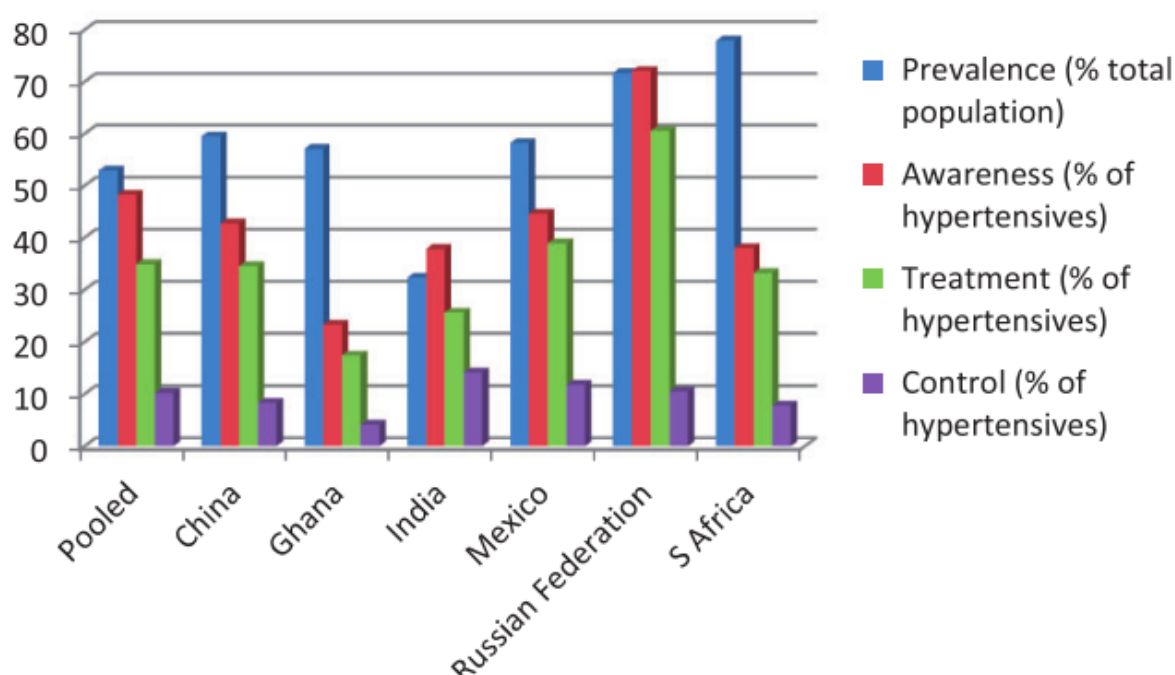
Donor agencies have advanced the argument that NCD does not affect the poorest in the 'developing' world. However, the picture is not so clear cut when one considers data on the burden of NCD across socioeconomic strata in a range of L&MICs.

In Bangladesh, the frequently cited MATLAB data show that the proportion of deaths due to NCD has increased in the MATLAB area over the past three decades, and the proportion of deaths due to CDs have dropped with the significant health gains (Chowdhury *et al.* 2013). The 2011 Bangladesh Urban Health Survey (BDHS) found that in the poorest wealth quintile to the highest wealth quintile, the prevalence of hypertension varied among women from 25 per cent to 44 per cent and among men from 13 per cent to 30 per cent (NIPORT *et al.* 2013). The prevalence of diabetes varied substantially across socioeconomic strata. For women aged 35 and over, prevalence varied from 7 per cent among the poorest to 21 per cent among the richest; for men, the corresponding figures were 8 per cent and 20 per cent (NIPORT *et al.* 2013). In this case, there is higher prevalence in the higher quintiles, but the lower wealth quintiles are not unaffected.

Lloyd-Sherlock *et al.* (2014) have used new publicly available data from the WHO Study on global AGEing and adult health (SAGE), which comprises nationally representative household surveys in China, Ghana, India, Mexico, South Africa and the Russian Federation.

These six countries include a total study population of 35,125 high-risk (aged ≥ 50) individuals. The SAGE findings indicate that hypertension affects poorer groups just as much as the rich, if not more. Effective control of hypertension was only demonstrated in 16 per cent of hypertensive people in the wealthiest quintile with failure to control represented in all quintiles. The prevalence of hypertension in all the surveyed countries was broadly comparable to those of 'developed' countries (53 per cent in India to 78 per cent in South Africa). On average, half of the populations sampled were aware of their condition, but only 4.1–14.1 per cent were able to achieve blood pressure control (Figure 2.3).

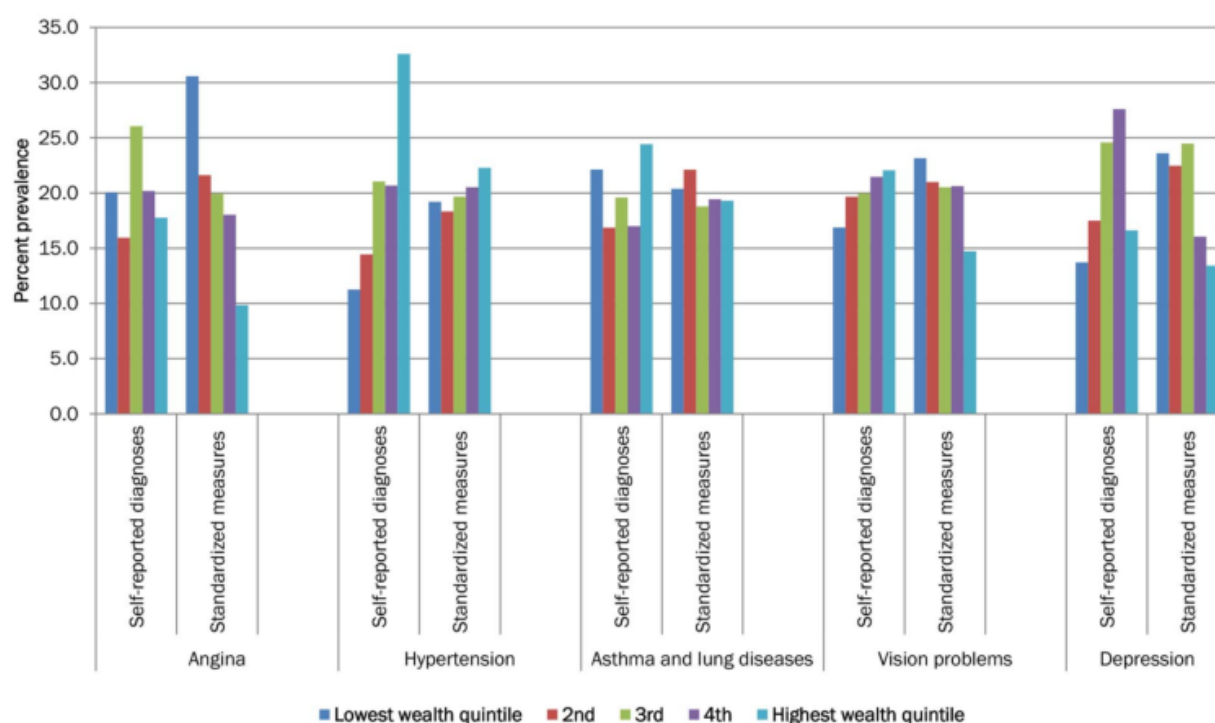
Figure 2.3 Summaries of the national data for hypertension prevalence, awareness and treatment, as presented in the main data tables



Source: Lloyd-Sherlock *et al.* (2014: 10).

Vellakkal *et al.* (2013), in a study based also on an analysis of data for India from the WHO SAGE study, found significantly lower prevalence rates for most NCD when a diagnosis was based on self-report rather than standardised measures. The authors found no strong socioeconomic status (SES) gradient when using standardised measures of disease (Figure 2.4).

Figure 2.4 Percentage distribution of age-standardised prevalence rate of self-reported diagnoses and standardised measure of diseases among adult Indian population in 2007, by income quintiles



Source: Vellakkal *et al.* (2013).

The data on SES and NCD also varies for different conditions. In a systematic review of socioeconomic inequalities and obesity in developing countries, it was found that obesity was more prevalent in higher-SES groups within low-income countries; however, there were mixed results in middle-income countries, especially for men (Dinsa *et al.* 2012). Capingana *et al.* (2013) conducted a cross-sectional study comprising 615 public sector workers aged 20–72 in Angola. It was found that a high prevalence of risk factors for CVD was present, and that lower income groups had a significantly greater prevalence of hypertension, smoking, and left ventricular hypertrophy. Hosseinpoor *et al.* (2012), using 2002–04 World Health Survey data from 41 L&MICs, showed similar trends in socioeconomic inequalities in the low-income countries compared to middle-income countries. Wealth and education were both negatively associated with angina, arthritis, asthma, depression and co-morbidity prevalence. However, level of wealth and education were positively associated with diabetes prevalence. Thus, NCDs are not necessarily diseases of the wealthy, and different conditions show unequal distribution across socioeconomic groups in L&MICs.

Even if emerging data does start to suggest that people in higher wealth quintiles in L&MICs are the ones most affected by NCD in these countries, as opposed to the ‘poorest of the poor’, that does not nullify compelling arguments regarding the impoverishing effect of NCD on households, especially those not far from poverty lines. The more complex nature of the relationship between poverty and NCD must be acknowledged. Research on the ‘emerging middle class’ has added to the recognition that global inequality is a significant concern and that it is as much about geographic location as class. This growing middle class are not comfortably rich. According to Kapsos and Bourmpoula (2013), since 2001 the number of workers joining the middle class has doubled to nearly 800 million with their incomes sufficient for their families to consume US\$4–13 a day per person. The ‘near poor’ or those living on US\$2–4 a day since 2001 has increased more than fourfold to 660 million people

forming 25 per cent of the workforce in L&MICs. Many of these 'near poor' are not covered by social insurance, and risk slipping back into poverty in the event of an economic crisis. This reflects widespread informality and vulnerability among workers in the US\$2–4-a-day category and shows a clear need for improvements in productivity, sustainable structural transformation and expansion of social protection systems to ensure a basic social floor for the poor and vulnerable (Kapsos and Bourmpoula 2013), and not only the poorest of the poor.

2.3.3 The economic impact of NCD on L&MICs

The WHO 2008–2013 Action Plan for the Global Strategy for the Prevention and Control of Noncommunicable Diseases drew attention to the need for NCD prevention as an integral part of socioeconomic development. The financial and food crises of 2008 and 2009 have put an enormous strain on millions of households, with many being affected by poverty and malnutrition. Furthermore, the response of the G20 countries to these crises with sustained spending cuts to national budgets has reduced development programme funding in L&MICs (Geneau *et al.* 2010). The World Economic Forum (WEF 2011) has forecast through macroeconomic simulations that NCD including CVD, chronic respiratory disease, cancer, diabetes and co-morbid mental health conditions, may result in a 'cumulative output loss' of as much as US\$47 trillion (£30 trillion) by 2030. Together, mental health conditions and CVD account for almost 70 per cent of lost output and are the main contributors to the global economic burden of NCD, followed by cancer, chronic respiratory diseases and diabetes (WEF 2011). It is significant to note the effect of mental disorder, not acknowledged by WHO in its definition of NCD. Also, it is important not to forget that the leading global cause of years lost due to disability (YLD) in high-income and L&MICs for men and women is unipolar depressive disorders (WHO 2008).

National health-care budgets are being increasingly allocated to the treatment of CVD, cancer, diabetes and chronic respiratory disease. In an example of the cost-of-illness approach, the cost of diabetes care per patient in Cameroon was US\$489 per year in 2002 (Mbanya and Ramiya 2006). This cost exceeds the annual per head income by 1.5 times, and exceeds the per head governmental health spending by around 50 times. Cameroon is not alone, with emerging evidence of a diabetes 'epidemic' across many of the poorest countries in sub-Saharan Africa (Mbanya and Ramiya 2010). The national costs for treatment of diabetes ranges from 1.8 per cent of GDP in Venezuela to 5.9 per cent in Barbados (Barceló *et al.* 2003). For the Latin America and Caribbean region, costs of treating diabetes were estimated at US\$65 billion annually, or 2–4 per cent of GDP (Wild *et al.* 2004), and 8–15 per cent of national health-care budgets (Zhang *et al.* 2010). Tables 2.1 and 2.2 present the projected cost of diabetes in 2010 and 2030 respectively, with high-income countries bearing the majority of the burden. It is projected that by 2030 middle-income countries will take on substantially greater direct costs.

Although high-income countries currently bear the biggest economic burden of NCD, due to population and economic growth, L&MICs post-2030 are forecast to bear the majority of the cost, especially middle-income countries. The majority of this financial burden is projected to settle upon Asia. This is a big concern for the Asian economies, where 40–60 per cent of the health expenditure is paid by individuals. Higher health-care costs for Asia's millions of poor also threaten efforts to increase real income levels and raise living standards.

Table 2.1 Estimated global cost of diabetes in 2010 by country income level, 2010 US\$

Income group	Direct costs (US\$bn)	Disability costs (US\$bn)	Mortality costs (US\$bn)	No. of people with diabetes (millions)	Direct costs as % of world total	Indirect costs as % of world total	People with diabetes as % of world total
High	341.5	41.7	5.8	74.7	90.8	49.8	26.2
Upper middle	28.1	33.1	2.1	96.1	7.5	36.8	33.8
Lower middle	6.0	11.3	0.8	97.5	1.6	12.6	34.3
Low	0.4	0.7	0.1	16.2	0.1	0.8	5.7
Total	376	86.8	8.8	284.5	100	100	100

Source: Adapted from WEF (2011: 25).

Table 2.2 Estimated global cost of diabetes in 2030 by country income level, 2010 US\$

Income group	Direct costs (US\$bn)	Disability costs (US\$bn)	Mortality costs (US\$bn)	No. of people with diabetes (millions)	Direct costs as % of world total	Indirect costs as % of world total	People with diabetes as % of world total
High	123.6	54.3	7.2	92.6	25.4	24.1	21.2
Upper middle	55.8	131.9	9.5	143.7	11.5	55.4	32.8
Lower middle	294.5	44.8	4.4	170.0	60.6	19.3	38.9
Low	12.2	2.6	0.6	30.9	2.5	1.3	7.1
Total	486.1	233.6	21.6	437.2	100	100	100

Source: Adapted from WEF (2011: 25).

Meanwhile, it may appear that high-income countries stand to lose the greatest from the current NCD burden (Table 2.3). It should, however, be noted that the high-income countries are nearly four times as likely to have NCD services and treatments covered by health insurance than low-income countries. In countries without adequate insurance, this will result in lack of access to universal health care for the treatment of NCDs. Consequently, high out-of-pocket payments are made even for routine services, with a high likelihood of catastrophic spending by individuals and families in the event of life-threatening NCD (Ding *et al.* 2011; WHO 2011b). Out-of-pocket payments tend to deter people without adequate coverage from using health services and result in high levels of financial stress, and also encourage overuse by people who can afford to pay (WHO 2010b).

Table 2.3 Global economic burden of NCD by country income level, 2011–30 (trillions of US\$ 2010), based on an EPIC model

Country income group	Diabetes	Cardiovascular diseases	Chronic respiratory diseases	Cancer	Mental illness*	Total
High	0.9	8.5	1.6	5.4	9.0	25.5
Upper middle	0.6	4.8	2.2	2.3	5.1	14.9
Lower middle	0.2	2.0	0.9	0.5	1.9	5.5
Low	0.0	0.3	0.1	0.1	0.3	0.9
L&MIC	0.8	7.1	3.2	2.9	7.3	21.3
World	1.7	15.6	4.8	8.3	16.3	46.7

Note: *The numbers for mental illness were obtained by relating the economic burden of all other diseases to their associated number of DALYs. Then the burden for mental illness was projected using the relative size of the corresponding DALY numbers to all the other conditions.

Source: Adapted from WEF (2011: 29).

International donors have funded NCD activities in L&MICs, despite the lack of focus and funding from international development agencies. Out of the 157 countries, one-third of low-income countries had no funding for NCD prevention and control with many others having very little funding. Parts of Africa are of particular concern due to the consistent CD epidemics there coupled with high rates of NCD (WHO 2010a). This double burden, in combination with inadequate health-care systems, results in much higher costs to the state and individuals in the long run. In essence, as the technologies to lengthen the lives of those with chronic conditions are developed, the fixed costs of the health system increase. It is therefore argued that the financial burden of NCD will require uncomfortable social and political trade-offs (Allotey 2011). WHO (2011c) estimates that the excessive costs of NCD, including lengthy and expensive treatment and loss of breadwinners, are forcing 100 million people into poverty annually, and thus constraining development efforts.

2.4 Future scenarios

The previous sections have presented the evidence for the economic, social and health burden of NCD in L&MICs. On the strength of this evidence, we have argued that the NCD burden is a development issue and one that requires development attention. In addition, many L&MICs face a double burden of NCD and CD, with fewer resources, and with less time to respond effectively. The economic burden of NCD on government health and social care budgets is likely to become the source of growing political pressure on governments to provide policy responses to NCD.

In 2012, the World Health Assembly endorsed an important new health goal: to reduce avoidable mortality from NCD by 25 per cent by 2025 (the '25 by 25' goal). A key global health figure argues NCD remains the least recognised disease group that threatens the future of human health and wellbeing (Horton 2013). However, will the public health view alone be adequate in providing responses, or do we need to revise the goals and refine our understanding of the kinds of worlds we will be intervening in? We would contend that coming close to achieving the 25 by 25 goal will require that several development concerns are addressed. Public health responses alone, either at the level of individual risk factors or even in the strengthening of health systems, will not be adequate to meet the challenges posed by NCD. From a development perspective, an important future goal would be a reduction of the impact of NCD on households by focusing on reducing the earlier mortality and morbidity from NCD in L&MICs, preventing the early progression to severe disability, and providing a robust social protection framework for NCD. The question of how to bring these issues to the attention of governments and how to mobilise political will for action, and action across sectors, is key.

What about the future worlds that we will be intervening in? As the number of people living in cities grows, with the intensifying of urban inequalities, it is unlikely that people most affected by NCD are going to be able to change their lifestyles without significant changes in the urban environment and without interventions to address a range of structural inequalities. People living in cities on low incomes will not be able to afford the 'healthy living' and organic ranges marketed in the global North to enable healthy food choices. The scale and pace of urbanisation is a main factor underlying the failure of agri-food systems in many L&MICs to produce, purchase, process and distribute safe, healthy foods that are accessible and affordable, especially by the poor. The double burden of disease is evident even within single households. Undernutrition remains a serious problem among the urban poor. However, unhealthy diets that are high in fat, sugar and salt are increasingly common. An approach based on healthy carbohydrates, healthy oils and adequate proteins and fresh fruit and vegetables needs more emphasis. Where limited enforcement of food standards exists, foods may also contain chemical toxicants and microbial pathogens, either due to environmental contaminants or introduced during storage and processing, which often results in nutritional degradation.

Health systems in countries with limited resources and/or weak states are struggling to cope with the traditional burdens of maternal, neonatal and child health and infectious diseases. They have almost no capacity to manage effectively or even identify the increasing number of people with NCD. These problems are particularly acute in the slum areas of large cities, where the poor typically have to purchase food in wholly unregulated markets. They are unlikely to have access to reliable information about the food they are eating, risk factors for NCD and how to address these, information about self-management options or where to seek treatment. The city of Dhaka provides an example of the challenges posed by nutrition-related NCD amongst the urban poor. Dhaka is growing rapidly; its population is expected to reach 22 million by 2025. A large proportion of the population of Dhaka lives in overcrowded slums (El-Saharty *et al.* 2013). The food and health systems of Bangladesh have very limited capacity to deliver safe, healthy, affordable food and quality health products and services,

particularly to the poor population. A significant proportion of Dhaka's population is undernourished and exposed frequently to microbial pathogens and chemical toxicants, whilst there is a simultaneous high and rising burden of NCD linked to unhealthy diets, including amongst the poor. A pluralistic health market has created a complex landscape for health-seeking and weak infrastructure to support NCD self-management. The ability of government agencies to set or enforce regulations is also limited.

The realities existing in a city such as Dhaka exemplify the kinds of issues that we attempted to envisage when developing the future scenarios as part of the Foresight methodology employed by this project (see Annex 2). This situation is to some degree encapsulated in the right-hand two quadrants in the matrix we developed, with varying degrees of technology diffusion distinguishing the top and bottom right-hand quadrants. These were uncomfortable scenarios for the team to speculate about, but ones that we acknowledged were likely to be mirrored in the realities of future 'worlds'. The top left-hand quadrant speculated about a situation where a high degree of state intervention was possible, with a government committed to principles of citizen rights and social justice. Even in this scenario, however, we envisaged the reality of corruption and competing interests and strains on health and social care systems. Considering these scenarios helped us in the assessment of the kinds of policy responses that have been developed already in L&MICs. A critical review of some of these policy options forms the next section of this report, which is divided thematically according to the four areas addressed in the project. In each thematic area, particular attention was given to policy developments in one case study country. As mentioned at the outset, the scope was limited to nutrition-related NCD.

The four thematic areas are as follows:

1. **Health system responses** (Hayley MacGregor, Gerry Bloom and Steven Lally): a focus on South Africa in Section 3.1;
2. **NCD-sensitive social protection** (Keetie Roelen and Mark Davies): a focus on Ghana in Section 3.2;
3. **Regulation and the agri-food industry** (Spencer Henson): a focus on South Africa in Section 3.3;
4. **Governance and NCD** (Andrés Mejía Acosta): a focus on Brazil in Section 3.4.

3 Thematic areas

3.1 Health system responses

By Hayley MacGregor, Gerry Bloom and Steven Lally

L&MICs undergoing an epidemiological transition from infectious diseases to NCD face a challenge to find innovations in health systems that can meet the requirements created by the long-term or lifelong course of NCD, in addition to strengthening prevention efforts (Cameron *et al.* 2011). As NCD prevalence has risen, the capacity to manage NCD has also improved and new treatments are emerging, not all of which are low-cost options. As this reality unfolds, it is distinctly possible that the financial burden of NCD will become increasingly significant in comparison with other parts of the health system (Allotey 2011). Looking into the future, it is unlikely that an emphasis on the provision of more hospitals, specialist doctors and expensive end-of-life care will be able to address the problem of the NCD burden in a sustainable way. Rather, principles of prevention, health promotion, early detection, community-based health care and support for disease self-management are emerging as the basis of proposals for NCD in several L&MICs. Even so, it has been argued that such models might also require a level of capacity and resourcing that remain out of reach for many L&MICs (Allotey 2011).

The problems faced by health-care systems in L&MICs are compounded by persistent diseases of poverty, and the now double burden of infectious and non-infectious diseases. In both these categories there are diseases that can be categorised as ‘chronic lifelong illnesses’ (van Olmen *et al.* 2011). Increasingly, there is interest in considering the joint challenges posed by designing systems for management of such conditions. In sub-Saharan Africa, this includes learning from the health systems’ interventions designed for HIV/AIDS treatment programmes. A further challenge is the inadequately understood nature of co-morbidities of CD and NCD. This section first explores some overarching responses to NCD that have been proposed at the level of health systems and then critically examines approaches with particular reference to the case of South Africa.

3.1.1 Developing national NCD plans and strengthening health systems

The Innovative Care for Chronic Conditions Framework (WHO 2002a) identified core building blocks to redesign health systems in L&MICs to cope with long-term health conditions. The framework is built on partnerships in order to support patients at the micro level and advocates a well-coordinated policy and health systems environment. According to WHO’s *Global Status Report on Noncommunicable Diseases 2010*, a review of national health strategies and plans revealed that NCD was not included as a priority in a large number of national plans. The report asserts that measures must be undertaken to ensure that national plans for NCD are indeed developed and that these should be based on up-to-date analyses of the situation in local contexts in order to inform the establishment of priority areas. In addition, the plans need to include strategies for financing and human resource capacity development, and for monitoring and evaluation. Effective implementation of the policies then needs to become a greater priority. The report also foregrounds the importance of building alliances between different stakeholders and across sectors to share resources and common goals (WHO 2010a: 80). The WHO 2008–2013 Action Plan for the Global Strategy for the Prevention and Control of Noncommunicable Diseases places an emphasis on addressing NCD in the context of overall health system strengthening, with a focus on integrated care rather than discreet vertical programmes for NCD. This is echoed in the call to integrate care for a range of chronic lifelong illnesses (van Olmen *et al.* 2012).

3.1.2 Early detection, education and better surveillance

Early detection of disease in combination with adequate information to individuals about what it means to be 'at risk' or to have an NCD is increasingly proposed as a key element of a comprehensive response to NCD. Even if people have been informed of a diagnosis, they might not be aware of what treatment or behavioural change is necessary. Additional barriers can exist for them in seeking care, such as the cost of transport or treatment. For example, in South Africa a household survey found that 74 per cent of health problems were reported as 'chronic', and 48 per cent of cases had received no treatment in the previous month. In a linked follow-up of households, among subjects with reported 'chronic illness' (chronic lifelong illness, including HIV and TB), only 62 per cent had an allopathic diagnosis and only 35 per cent were receiving regular treatment (Goudge *et al.* 2009b). Whyte (2012) discusses how, in the context of Uganda, NCDs are considered to be 'new' diseases and are poorly understood. She maintains that people in this context are less likely to take action regarding a biomedical diagnosis if there are no facilities available to them to seek treatment and care. This also raises the ethical difficulties of categorising people as 'at risk' of NCD in contexts where relevant biomedical services are rudimentary. In addition, the anthropometric measurements to determine who has early disease in low-resource settings have seldom been developed from data collected in such settings, which raises additional concerns (Roy Mayega, pers. comm. 2013).

These caveats aside, risk factor screening and national NCD surveillance systems are proposed as essential to establishing monitoring frameworks and there are frequent calls for the collection of better global-level data as well as context-specific regional data. WHO (2013) argues that mortality data from civil registration systems or verbal autopsy programmes are central to monitoring progress towards the overall NCD mortality reduction goal. Beaglehole, Bonita and Horton (2013) argue that nationally representative population surveys with adequate sample sizes (for detecting important age, sex-specific, and socioeconomic trends in risk factors) are required at regular intervals and at least every five years.

3.1.3 Scaling up of low-cost drugs and distribution systems

Improved distribution of, and access to, essential medicines has been a rallying cry from within a sector of the public health community. This was part of the Alma Ata Declaration of 1978, and is one of the six targets of the MDGs. The availability of medicines for the treatment of chronic NCD is particularly poor when compared with the availability of medicines for acute conditions. In a study of 40 countries, the mean public sector availability of generic NCD medicines was 36 per cent, while in the same facilities the availability of medicines for acute conditions was 53.5 per cent (Cameron *et al.* 2011). A lack of medicines in the public sector forces patients to purchase medicines from the private sector, where generic medicines cost on average 600 per cent more than their international reference price. Low public sector availability of medicines and high private sector prices can again drive families into catastrophic poverty, particularly those with a family member suffering from a chronic NCD (WHO 2012b).

Hogerzeil *et al.* (2013) argue that 30 years of experience with policies for essential medicines and ten years of scaling up of HIV treatment have provided knowledge that is relevant to addressing barriers to long-term effective treatment and prevention of NCD. WHO has maintained that continuous access to essential medicines, with an emphasis on rational selection, clear treatment protocols, affordable prices and sustainable financing, should be a key component of policy frameworks (WHO 2005). Proponents of scaling up of drug availability (including combination tablets such as the 'polypill') argue that appropriate pharmacological treatment can significantly reduce morbidity and mortality from NCD, if effectively delivered, and can reap future savings in terms of reduced medical costs, improved quality of life and productivity (Yusuf *et al.* 2011; WHO 2010a). However, due to

weak health systems, the necessary medicines are not equitably distributed or used as widely as required, particularly in L&MICs (Strong *et al.* 2005; Yusuf *et al.* 2011). There are in addition many structural constraints to seamless ‘scaling up’ of drug systems and not all L&MICs have the means to ‘treat their way out’ of the NCD challenge, if such an approach alone would indeed be effective.

In India, recent attempts have been made to improve access to medicines in an initiative by the pharmaceutical company, Novartis, by facilitating the development of ‘micro-pharmacies’ that distribute basic affordable medicines, including generic drugs, to people living in villages and rural areas. As a part of the Arogya Parivar Program, there are now 250 of these in India, catering potentially for 42 million people (33,000 villages) in ten states. The medicines are largely targeted at CDs but also include nutritional supplements as well as treatments for anxiety, allergies and diabetes. Employee incentives include monetary rewards based on commercial sales revenues for sales supervisors, social goals for educators, and opportunities for career advancement (Access to Medicine Foundation 2012). The company promotes the programme as intended to do ‘social good’. However, it also acknowledges that, given the number of people living in rural areas, the project could help improve its profitability in the long run (Singh 2012). In Brazil, there has been expansion of the pharmaceutical care and free distribution of 11 hypertension and diabetes medicines. In March 2011, the Farmácia Popular Program (Popular Drugstore) started offering free medicines for hypertension and diabetes to more than 17,500 affiliated private drugstores. This measure has expanded access and has served 2.1 million individuals with hypertension and 788,000 with diabetes since July 2011, which accounts for nearly a 200 per cent increase compared to January 2011 (MoH 2011).

However, there are also caveats regarding a heavy emphasis on drug therapy for NCD, and several strands of reasoning that conclude that excessive ‘pharmaceuticalisation’ of the response can also be undesirable. The cost–benefit analysis of treating at earlier and earlier stages of disease or pre-disease is a matter for debate, especially when the side-effects of drugs are also not insignificant. For example, some doctors have questioned the value of treating patients who are still healthy, effectively giving people drugs to prevent rather than treat illness. This issue has been debated recently in the United Kingdom (UK) with respect to cholesterol-lowering statins (*The Guardian* 2014a). Abramson *et al.* (2013) argue that research shows that statins did not significantly reduce mortality and caused moderate to severe side-effects for up to 20 per cent of risk groups. However, after the Cochrane review published by Taylor *et al.* (2013), the UK’s National Institute of Clinical Excellence has changed clinical guidelines to recommend that statins be prescribed to those at a ten per cent risk of having a heart attack or stroke in ten years. For pharmaceutical companies, the rapid rise of NCD in L&MICs also represents a lucrative market – even more so when health systems are fragmented and unregulated. Though off-patent medicines are available for heart disease and diabetes, costs continue to vary widely (Chand 2012). Katz (2013) recently highlighted the potential business opportunities that can arise from international NCD proposals. He argues that a range of commercial actors stand to benefit from some proposed NCD interventions, including leading pharmaceutical, medical equipment, and health services and insurance companies.

3.1.4 Primary health care and participatory approaches

The re-establishment of an agenda for primary health care, the success of community-directed interventions, the increasing use of community health workers, and ongoing discussions on task-shifting suggest a strengthening also of commitment to community-based responses to NCD in L&MICs (CDI Study Group 2010; Mbeh *et al.* 2010). A growing body of evidence is coming to the fore which argues for the cost-effectiveness of these approaches. Community cooperation and involvement has been considered to be crucial by WHO in the provision of primary care and prevention measures, as well as in promoting awareness-raising campaigns. WHO encourages the health education bureaus in countries

to develop and produce educational materials for patients, families and the community to train primary care workers and use community-based mobilisation for targeted screening (WHO 2012b: 48). In the lead-up to the UN high-level meeting on NCDs, the WHO Director-General also called for more support for integrated community-based, people-centred primary health care services for health promotion, prevention, early detection and treatment (WHO 2011a: 18). Simple screening and management protocols are proposed to assist lesser trained health workers, as is the use of low-cost information and communication technologies (ICTs).

Brazil's model of outreach teams as part of the Programa Saúde da Família (PSF, Family Health Programme) has been a good example of how to achieve health coverage for a greater majority of the population irrespective of socioeconomic status. Health agents are residents of the community in which they work. They operate in an outreach team under the supervision of a doctor or nurse, gathering information on the health status of households in the community. Each health agent is responsible for approximately 750 individuals (150 households) in their locality. In India, a programme of Accredited Social Health Activists (ASHA) has instituted volunteer female health workers. The primary responsibility of an ASHA is to act as an interface between the community and the public health system. They are tasked with initiating community-based interventions for behavioural change to prevent and control a wide range of NCD. These kinds of measures are important also at a governance level for monitoring quality and outcomes at a health systems level.

3.1.5 Universal health coverage and health financing

Universal health coverage, and in particular universal access to health financing, has become a significant issue for the post-2015 agenda. For chronic lifelong illness, where the relationship between poverty and illness is very evident, this is a particularly important agenda. One approach has been to identify basic packages of care to make a minimum level of provision available for a range of conditions. China, for example, has a policy combining this approach with monitoring of physiological markers such as blood pressure and glucose through household surveillance programmes. South Africa is engaged in examining the introduction of a National Health Insurance Scheme, despite resistance from corporate interests in the private health sector.

3.1.6 'Full patient self-management' of chronic lifelong conditions

Van Olmen *et al.* (2011) have argued that an approach based on a high level of patient self-management of chronic lifelong conditions (such as through personal monitoring of disease status, responsibility for risk factor mitigation through behavioural change, and drug adherence) is particularly necessary in contexts with limited human and material resources for health. Low-cost technologies for diagnosis and monitoring, they propose, can enable this call for 'full patient self-management'. They propose that from a health systems perspective, a framework for 'chronic lifelong conditions' is more helpful than separating out approaches for the management of CD and NCD. Health education and effective communication of information are seen as crucial to enabling this shift to 'active' and 'empowered' patients, as articulated in the concept of health literacy (Nutbeam 2008; Kickbusch 2001). In contexts with limited access to long-term relationships with specialist health professionals who can provide the support for health literacy, various community-based alternatives have been proposed. For example, community adherence groups have been organised in remoter districts of Mozambique by lay counsellors and sustained by patients with the aim of providing support for antiretroviral adherence and of pooling the cost and responsibility of collecting medication from distant health centres (Decroo *et al.* 2011). Whilst this model raises some concerns about adequate detection and support of problems such as drug side-effects, as well as questions about the kind of patient that might be excluded from such forms of organisation, it is certainly an innovation worth considering for adaptation for other chronic lifelong conditions. In a low-income urban settlement in South Africa, disease clubs have

been initiated to support community-based distribution of antiretrovirals for 'stable' HIV-positive patients (Luque-Fernandez *et al.* 2013). Expansion of this model for the management of other NCD has been proposed and such clubs do in fact already exist connected to some facilities in South Africa. In Cambodia, the non-governmental organisation (NGO) called MoPoTsyo operates through a system of 'expert patient networks' to screen for and support diabetes management. Individuals with diabetes themselves are trained to become peer educators and to visit people's homes. The MoPoTsyo patient information centre works with patients and involves them as volunteers and to provide information about acquiring safe and cost-effective medications. The Cambodian government has expressed interest in the model.

Such community-based initiatives indeed offer innovative options and suggest that new forms of partnerships between the state and the non-profit and private sectors will become increasingly important as health systems in L&MICs scale up models for the management of NCD and chronic lifelong conditions more generally. The extension of systems beyond the facility thus involves shifts in the power balance between providers and patients, with more emphasis on patient responsibility, peer support networks, and on community-level organisations and lay health workers. However, adequate support of patients and lower level health workers remains necessary, such as through clear protocols for grading disease severity and instituting referral back to specialist care where needed. In addition, it is important to heed warnings that certain kinds of patients might be excluded in systems that require a particular kind of 'expert patient' to organise and engage.

Surmounting these challenges for the state health system is clearly important and innovations are critical. However, it must also be recognised that health information-seeking is complex in contexts with plural health markets and a plural health knowledge economy, with a range of potential knowledge intermediaries. It is highly likely that patients who are interfacing with the formal health system in these settings are also consulting and receiving health information from a wide range of sources beyond the formal health sector, and beyond interactions with the community-based health workers who are usually connected to the state clinics. They are also likely to be purchasing or obtaining drugs and health services from the private health sector, NGOs, pharmacies, drug vendors and a range of informal providers. Thus, whilst one part of conceptualising the problem is to see the key challenge in these settings as moving care and drug distribution beyond the facility and to involve the patient and community in degrees of clinic-sanctioned self-management and support, the reality in resource-constrained settings is that patients have potentially had limited support from the state health sector in the past, and in addition might not have sought sole support from state facilities due to lack of trust in the quality of the service. Indeed, if one assumes that people with chronic lifelong illnesses already have well-established strategies and approaches to accessing and interpreting health knowledge and applying this to 'self-management', this assumption raises a set of questions that invert the more standard problematic of how to extend services beyond the facility and how to co-opt and empower patients in a clinic-driven programme of self-management. In this regard, a more critical understanding of concepts such as 'retention-in-care' and 'adherence' are necessary, leading to a perspective of 'disease control' that incorporates a larger range of perspectives, including placing greater weight on the experiential knowledge of the person with illness, their beliefs about assessing bodily symptoms, and their strategies for illness management.

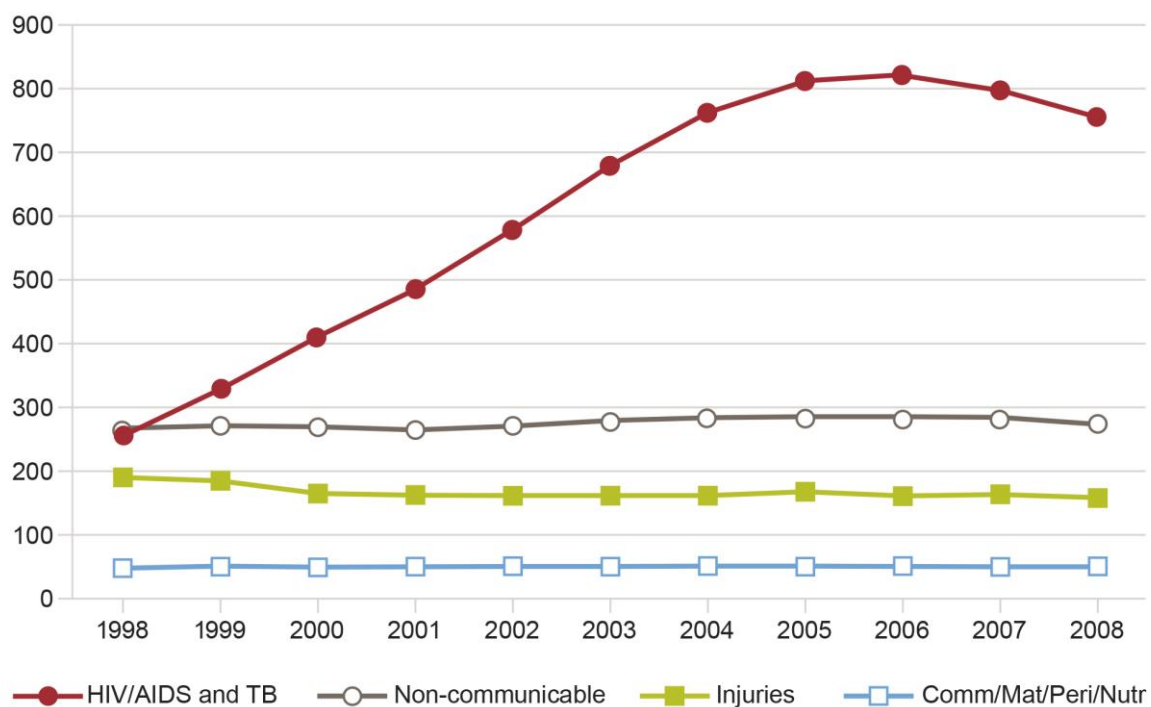
3.1.7 Case study of South Africa

The burden of NCD

South Africa is experiencing a quadruple burden of disease. Not only is there an epidemic of HIV infection that set in during the 1990s, ongoing maternal and child health problems, and high rates of injury, but there is also a significant burden of NCD. This affects quality of life and increases health-care expenses both at a personal and at a country level. NCD affects

large numbers of the working-age population, impacting on the workforce and productivity. The major NCDs in South Africa are CVD, diabetes, cancer, chronic respiratory diseases and mental illness. Using recent national data, Bradshaw (2011) suggests a relatively stable pattern of NCD during the period 1998–2008 (Figure 3.1). This could reflect different stages of epidemiological transition of a stratified population. It could also reflect specific trends in the major risk factors, such as a possible reduction in smoking but worsening of diets and levels of physical inactivity. Specific health interventions (such as the development of stroke units) might also be significant, or changes in the coding of disease (Groenewald *et al.* 2008).

Figure 3.1 Mortality rate in adults aged 15–59 years by broad cause, 1998–2008 (age-specific rate per 100,000 population)



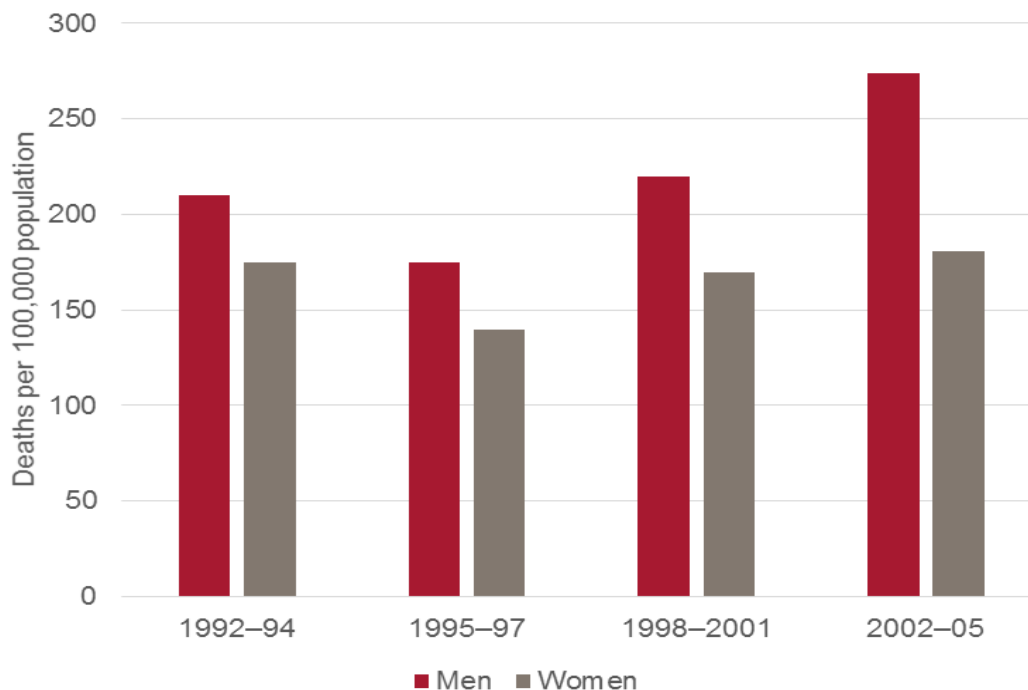
Source: Adapted from Bradshaw (2011).

There has been variation in mortality trends by specific diseases. Heart disease, diabetes, and stroke together constitute the second most important cause of death in adult South Africans. Data released by Statistics South Africa for 1999–2006 suggest that by 2003, premature adult deaths from stroke and ischaemic heart disease increased, but then decreased in subsequent years. By contrast, sustained increases were seen for diabetes and hypertensive heart disease from 1999 to 2006 (Mayosi *et al.* 2009).

NCD was the major cause of mortality in adults aged 40 years and older in a pooled estimate of causes of death between 2003 and 2006 in the Western Cape Province (Groenewald *et al.* 2008). The distribution of mortality in this study suggests higher rates in poorer areas with the highest number of NCD deaths occurring in two of the poorest sub-districts in Cape Town between 2003 and 2006 (Groenewald *et al.* 2008). In another study, the distribution of NCD also displays socioeconomic disparities, with the heaviest burden for poor communities in urban areas: age-standardised mortality rates in Cape Town show a social gradient in which people living in the poor sub-district of Khayelitsha have 856 deaths per 100,000 attributable to such diseases, compared with rates of 450–500 per 100,000 in the wealthy sub-districts of Cape Town. This trend in mortality rates is also apparent in deaths from injuries, HIV/AIDS, and other CDs (Mayosi *et al.* 2009).

Evidence from a study at the rural surveillance site at Agincourt in the north-eastern part of the country suggests the presence of NCD also in rural South Africa, with sex-specific variation (Tollman *et al.* 2008). Figure 3.2 shows that although mortality decreased in 1995–7, it increased in tandem with the HIV/AIDS epidemic, reaching levels of 270 and 180 per 100,000 population for men and women, respectively, by 2002–05.

Figure 3.2 Age-standardised mortality rates for NCDs by sex, in Agincourt sub-district, South Africa, 1992–2005



Source: Based on data from Tollman *et al.* (2008).

Health systems responses: re-engineering primary health care

The current Minister of Health in South Africa is generally applauded as having taken a leadership role in recognising the challenges of NCD in the country and indeed in also raising the profile of the problem at meetings of health ministers from elsewhere on the continent. There is thus evidence of political will to respond to this issue in South Africa. On a concrete level, the government has also taken steps to introduce regulations on compositional standards for the food industry (see Section 2.3).

A Strategic Plan for Non-Communicable Diseases 2012–2016 proposes a strategy for addressing the burden of NCD. A framework for a comprehensive three-pronged approach includes: (1) prevention and promotion of health at the level of the individual and community; (2) health systems strengthening for NCD control; and (3) monitoring of risk factors. At a health systems level, discussions on a new framework for re-engineering primary health care incorporate the principles for health promotion, early detection and community-based self-management support as discussed in the previous sections. In particular, the new framework has drawn upon mutual learning from the Brazilian model of outreach teams and shares that commitment to principles of primary health care. There are also ambitious and not uncontroversial plans to formalise the position of thousands of community health workers, bringing them into the employment structures of the department of health. In many instances, the current community health worker programmes have been financed through HIV and AIDS programmes, but there is now explicit mention of expanding the role of community health workers to also support for NCD. In this regard, cross-learning from the scaling up of

antiretroviral programmes is a highly relevant discussion in South Africa, as is integration of care between vertical disease programmes to develop a common approach to the management of chronic lifelong illness that also takes into account the workforce implications of proposals.

The challenge of self-management and retention in care: cross-learning from HIV

Responding to a high burden of HIV infection has been a catalyst for health policy and programme innovation in South Africa over the past decade. Public health imperatives to increase the coverage of ART for those who are eligible and to limit drug resistance, have concentrated concern in state health system planning on the attrition of patients from treatment programmes that are intended to be lifelong. Retention in care is emerging as an issue of concern as the South Africa ART programme develops into one of the largest in the world. Loss to care has been shown to occur at all points along the chain, from diagnosis to maintaining drug compliance, and several barriers to retention and adherence have been highlighted. As the numbers of people on ART expands, there is also concern to regulate the proportion attending state health facilities for specialist care and to titrate the demands on the health system. With drug prices decreasing and combination doses now a reality, the holy grail from a public health perspective has been to organise mass distribution of drugs efficiently and effectively: procuring safe antiretrovirals at low cost, delivering them to facilities, designing clear evidence-based algorithms for dispensing, devising forms of community distribution to make them accessible to patients, and finally, getting patients to collect and indeed ingest them on a daily basis. The human resource shortage in state health care has also stimulated interest in forms of community-based treatment support and dispensing by facility-supported community health workers or disease clubs. The currency of rights-based paradigms of care for HIV has facilitated the acceptance of ideas about disease self-management and patient responsibility as forms of empowerment. In addition, activist organisations, mobilised and funded for HIV work, developed mechanisms for holding the state to account and for monitoring quality of care in state facilities. An example is the Treatment Literacy and Prevention Advocates of the Treatment Action Campaign.

There are clear lessons from this scaling up agenda for the parallel challenges of responding to other chronic lifelong conditions including NCD in South Africa. Large numbers of individuals with illnesses such as diabetes and CVD (and indeed HIV-positive individuals experiencing co-morbid NCDs or changes in their metabolic profiles associated with antiretroviral treatment) are also requiring long-term therapy. The drugs for NCD too are becoming more affordable and are administered increasingly according to relatively straightforward regimens with relatively simple monitoring of outcomes possible, especially now with the aid of ICTs and point-of-care diagnostic technologies. Thus, as for the case of HIV, a similar challenge is proposed from a public health perspective regarding developing effective systems for the mass distribution of low-cost drugs, ensuring patients do collect these drugs on a regular basis without overburdening primary care facilities, minimising the time allocation of specialised health care workers through 'task-shifting', and devising strategies for supporting adherence and patient self-management.

Self-management and the political economy of NCD

Delivering drug therapy for HIV and now also for NCD to scale cannot be the sole focus of programme innovation in South Africa. The emerging data on problems with retention in care is just one indication that it is necessary to employ a more critical perspective on disease self-management and treatment adherence. Firstly, the state will most likely need to explore innovative partnerships with other actors at the community level, such as in the NGO or private sectors, in order to support self-management. Secondly, health information campaigns will have to address existing cultural notions of the body and the value often ascribed to overweight. In some communities, being overweight can signify wealth and wellbeing, and in addition can be read to indicate an absence of stigmatising HIV infection. Lifestyle choices such as indulging in fast food are also connected to aspirations of

modernity (Puoane 2005). Thirdly, South Africa is a context with diverse health markets, a plural therapeutic landscape, and widespread socioeconomic deprivation and social inequality. People confront on a daily basis big and small decisions about how to manage their chronic illnesses as embedded in their everyday lives, and in negotiation with notions of broader wellbeing. The sources of information that they draw upon in their decision-making about managing illness are likely to be multiple, and the intermediaries in this knowledge economy might have competing agendas. These choices can have different cost implications for patients. There is a need to understand better the range of messages people are getting about the management of their chronic illness and what they think and believe on the basis of this information. Scaling up the system of state care should ensure that all the different parts of the system function together effectively and patients should be enabled to negotiate these parts appropriately, according to the severity of their illness and need. Knowledge intermediaries in the state system, such as community health workers, should also be trained to interface with such everyday realities and a plural knowledge landscape, whilst at the same time support people to access trusted knowledge and use biomedical drugs effectively. The state needs to explore new forms of regulation to ensure safe and trusted health knowledge and services.

Finally, multi-sectoral responses are necessary to go beyond a paradigm of individual self-management to also address the food environment that exists in many low-income urban areas in particular, where supply chains and markets currently do not readily deliver a choice of affordable healthy food options. Environmental health at a district level should include matters pertinent to the food environment, starting in specific locations such as schools (Puoane, Tsolekile and Sanders 2013). The emerging epidemiological data in South Africa are revealing of the political economy of NCD in this country, and wider structural changes in the provision of health insurance and social security for chronic illness (a specific chronic illness benefit has been discussed for some time but not yet implemented) is necessary, particularly for people living in overcrowded low-income settlements that provide limited safe space for recreation, limited options to purchase healthy food that is cheap, and a street food industry of high fat snacks that supports time-scarce commuter lifestyles. In such settings, some of the policy responses are likely to involve pragmatic choices for the time being, whilst still aspiring to gold standards of international NCD policy.

3.1.8 Looking forward

Current proposals for scaling up of health systems in L&MICs for the management of chronic lifelong conditions such as NCD include valuable points for facility-level approaches. Furthermore, commercial innovations are driving progress in simple and cost-effective measures of outcome for disease control. For common NCDs, simple measures of blood sugar and blood pressure control are already established and cheap, requiring little specialist skill. Indeed, recent innovations in mobile health and other health ICT tools are revolutionising the possibilities for monitoring and can potentially be used by community health workers as well. However, expanding such systems for diagnosis, monitoring and treatment distribution to scale in the state health system involves addressing the barriers to effective distribution of and adherence to drugs all the way down to the level of the patient. Moreover, we would argue that it is not sufficient to rely on the mass distribution of drugs alone. Self-management of illness goes beyond drug adherence, and it is necessary to consider how best to support people in the contexts in which they negotiate illness. It is also necessary to address the constraints to their agency in terms of the options available to them for healthy food and lifestyle choices.

Furthermore, the competing interests that exist, such as in the fields of health information distribution and the promotion of pharmaceuticalised solutions for NCD, cannot be ignored. Health care proposals for NCD also offer considerable market opportunities. Charges have been levelled off conflicts of interest even in public–private partnerships between WHO and the tobacco, food, and alcohol industries (Katz 2013; Moodie *et al.* 2013). Katz (2013) argues

that proposals for cooperation with industry in addressing NCD risk factors can deflect from the social and economic determinants of health and focus the debate almost exclusively on risk factors relating to individual behaviour. In all, this can obscure the structural causes of disease and poverty, which serves to maintain the status quo of inequalities. The debate about how to engage with industry, be it through partnerships or binding legislation, will be addressed in Section 3.3.

A further challenge for countries facing a rising burden of NCD is how to align health spending with the scale of the NCD problem and how to raise the additional revenue required for NCD prevention and management. The idea of a health promotion fund fed by increasing the price of tobacco, alcohol, and unhealthy food products through large and phased increases in taxes (see, for example, Moodie *et al.* 2013) is increasingly a matter for discussion and these debates will be reviewed in Section 3.3. Beaglehole *et al.* (2013) propose that countries dependent on aid assistance to progress the NCD agenda need to ensure that NCD is on their priority list of requests for assistance, part of their national health and development plans, and incorporated into their UN Development Assistance Frameworks.

The declaration from the UN summit in 2011 underscores that the NCD response should not come from the health sector alone but rather from a multi-sectoral collaboration. Smith *et al.* (2012) argue that the promotion of healthy diets, physical activity and tobacco control initiatives must happen through cross-sector urban and development planning that includes transportation, agriculture, trade, finance and education, with the engagement of all community stakeholders – at the local, regional and national level. Thus the specific health systems proposals have to be considered not in isolation but in a broader context. A consideration of the political economy of NCD in L&MICs has to remain central to the analysis.

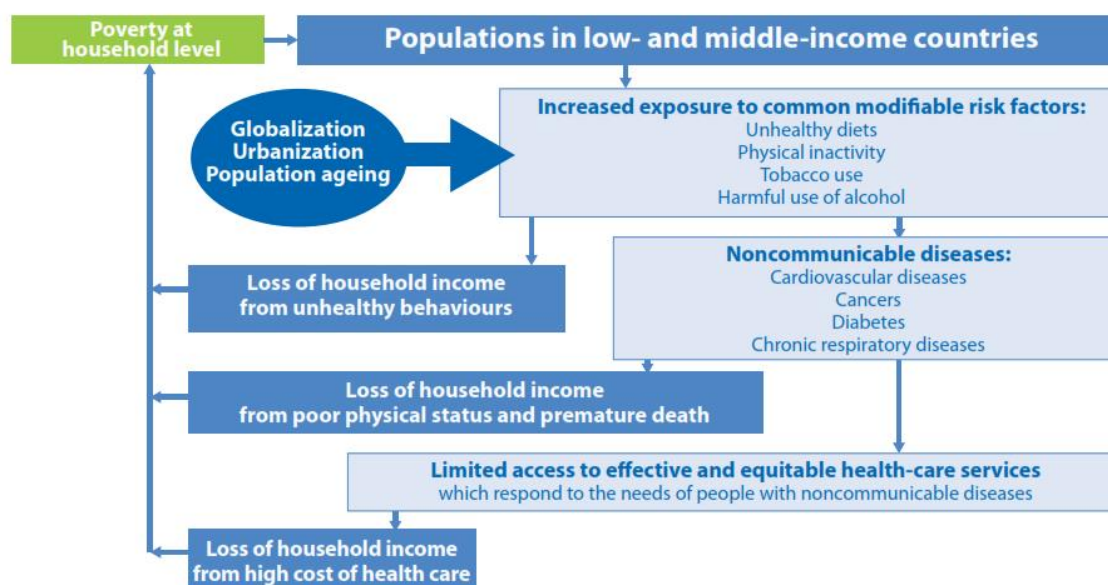
3.2 NCD-sensitive social protection

By Keetie Roelen and Mark Davies

This thematic section aims to scope linkages between NCD and social protection. It aims to provide a conceptual framework as well as examples of policy responses in a range of different countries from which lessons can be learnt.

NCD is associated with social determinants that are related to poverty, such as lower education levels, alcohol use, poor diet and lack of physical exercise (WHO 2010a). Furthermore, the lack of access to health care and social protection in low-income countries increases the likelihood of making people ill at an earlier age (United Nations General Assembly 2011). In turn, NCD causes serious socioeconomic consequences for individuals and households and increases the probability of impoverishment and of reducing human and economic development, if the necessary social protection mechanisms are not in place and accessible. As such, NCDs form part of a vicious cycle of the reproduction of poverty, since they disproportionately affect the poor people who have the least resources to cope with the burden of the disease and thus are the most likely to further impoverish (see Figure 3.3).

Figure 3.3 A vicious circle: poverty contributes to NCDs and NCDs contribute to poverty



Source: WHO (2010a: 35).

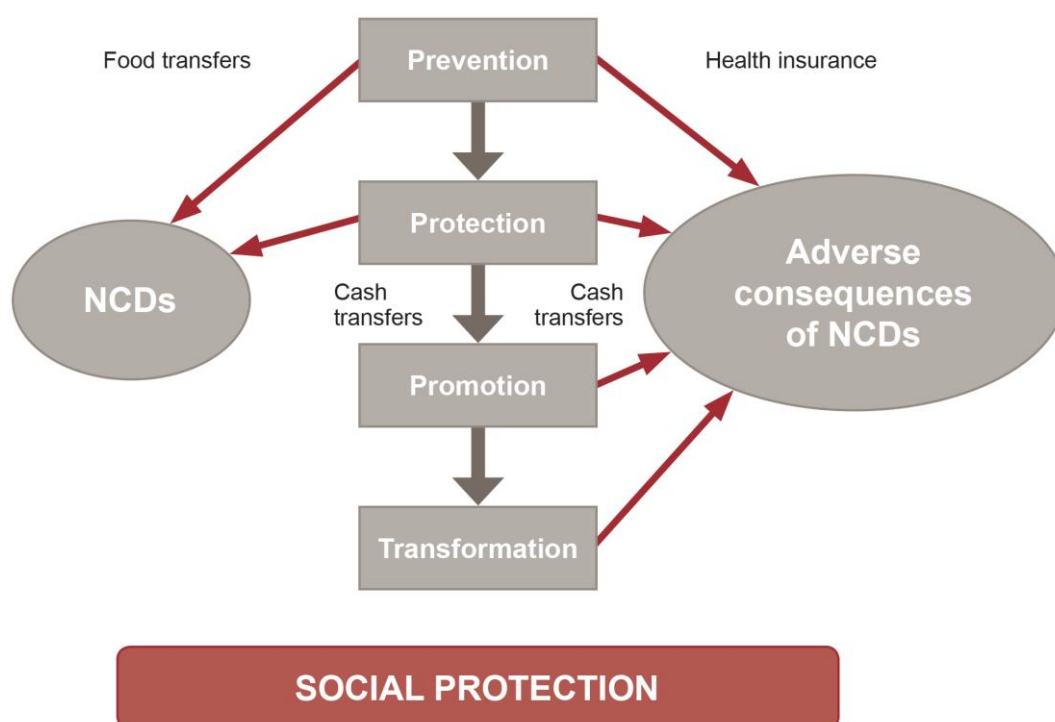
Social protection can contribute to breaking this cycle by addressing social determinants of NCD and mitigating the socioeconomic impacts of NCD (including income loss). This review presents a conceptual framework for the interaction between NCD and social protection, supply-side considerations in providing social protection for NCD and lessons learned for the way forward based on international experiences, including a Ghana case study.

3.2.1 Social protection and NCD: a conceptual framework

We start by setting out a conceptual framework by considering linkages between NCD and social protection. This framework considers how social protection interacts with NCD at household level, and how social protection can support households in preventing or coping with NCD as well as prevent or protect against the adverse consequences of NCD.

The potential role of social protection in terms of NCD at household level has two elements. Firstly, social protection can have an influence on the health aspect of NCDs. Secondly, social protection will also play a role in terms of responding to the adverse consequences of NCD. The various channels through which social protection can impact on NCD are depicted in Figure 3.4.

Figure 3.4 Social protection and NCD



Source: Authors' own.

The left-hand side of the diagram illustrates how social protection can have an effect on the occurrence and manifestation of NCDs. Social protection can work towards preventing the NCD through primary prevention by reducing the risk factors for becoming sick, as well as through secondary prevention by supporting early detection and treatment to mitigate impacts of an existing disease. Social protection can help households to cope with the disease by making medication and treatment for controlling disease affordable and accessible and by helping people to pay user fees for health care. Social protection may also provide mechanisms to support the provision of primary care, for example by financially supporting family members. Potential social protection instruments for doing so include (conditional or unconditional) cash transfers.

The extent to which social protection can play this beneficial role with respect to NCDs is currently under-researched. That said, findings from studies that are available having considered the impact of social protection on NCD and other illnesses point towards the importance of complementary measures. As argued by Lloyd-Sherlock *et al.* (2012), social protection has until recently paid insufficient attention to health risk prevention, and instead has over-focused on reduction of income poverty through cash transfers. Drawing on data from WHO for Ghana, Mexico and South Africa, they conclude that pensions do not necessarily have a positive impact on health outcomes and that policymakers should not assume a spill-over effect of cash transfers on health conditions. The main barriers identified to treatment of hypertension in this study were health education, health screenings and adequate health service provision, rather than the financial costs. It is suggested that the financially oriented approach to social protection neglects issues such as awareness, supply-side constraints and the many other factors that can influence health-seeking behaviour (for example, low literacy levels) (Lloyd-Sherlock *et al.* 2012). Analysis reveals that South Africa still has very high rates of undiagnosed and untreated hypertension, despite extensive health insurance programmes. Half of the insured older people with hypertension were not aware of their condition, which pointed to deficiencies in screening services and insufficient health education of the population (Lloyd-Sherlock *et al.* 2012: 62).

Similarly, in their analysis of barriers that urban households in Kenya confront in managing chronic diseases, Porter *et al.* (2009) find that whilst the cost of health care imposes a major barrier for households, other (non-financial) factors also play a significant role. They found that patients' knowledge and beliefs, the stigma associated with seeking treatment (in the case of TB and HIV), quality of providers and trust relationship, as well as the transport costs represent important barriers for poor households to access health services and treatment. Another study that concludes that the cash incentive of transfers to support access to health services is less powerful than programme implementers assume is Adato, Roopnaraine and Becker's (2011) comparative study of cash transfers in Latin America and Turkey. In many cases, questions of tradition, gender relations, beliefs or social exclusion are more powerful in bringing about behavioural change and making people use health services than reducing the financial barriers. Furthermore, it was found that raising awareness of health issues among beneficiaries and training health staff had impacted positively on health-seeking behaviour. Finally, a study by Goudge *et al.* (2009a: 248) finds that factors supporting health-seeking behaviour include increased awareness of health conditions and cheap transport to hospital services.

Goudge *et al.* (2009a), for example, studied two communities in South Africa and analysed the links between illness-related costs and impoverishment with access to one or more of the three studied social protection interventions (free health care, cash transfers and social networks). They conclude that cash transfers combined with free health care contributed to the resilience of the studied households, and that in general households needed to have access to two types of social protection not to run the risk of impoverishment through the direct and indirect costs of long-term illnesses. Cash transfers seemed to play an important role in protecting households against illness-induced impoverishment; however, the available types of cash transfers currently exclude families with working-age adults or older children, who are most exposed to the risk of HIV and TB, and above the age of 40 to hypertension, type 2 diabetes and CVD (Goudge *et al.* 2009a: 248). This calls for a close assessment of targeting policies for exemptions of hospital fees and cash transfers, which need to consider different categories of vulnerability and needs.

The potential perverse incentives – i.e. social protection reinforcing risk factors leading to NCD – compound the need for complementary services to 'standard' social protection instruments. There are several studies that have identified how cash transfers have led to increased body mass indexes or obesity among beneficiaries, particularly women (Akee *et al.* 2013; Forde *et al.* 2012). Several studies have concluded that conditional cash transfers to poor women are associated with increased body mass index (BMI), which is positively related to the age and household wealth (Forde *et al.* 2012). Particularly in the case of cash transfers in Latin America, like Mexico's Oportunidades programme, it appears that the transfers have led to excess weight gain among rural female beneficiaries and high blood pressure (Fernald, Gertler and Hou 2008; Forde *et al.* 2012; Leroy *et al.* 2013).

Social protection will also play a role in terms of responding to the adverse consequences of NCD, as depicted in the right-hand side of the diagram. Chronic illness puts people at risk of poverty or pushes people further into poverty, given the costs of managing the illness and foregone income as a result of the illness (Schneider *et al.* 2011). Social protection can help prevent such adverse consequences by dampening the income shock resulting from the inability to work through disability insurance or medical costs through health insurance. It can also mitigate such adverse consequences, for example, by protecting against the loss of income through cash transfers. Negative impacts following the loss of income in other areas of wellbeing such as nutrition and education for children in the household with someone suffering NCD can be tackled more directly by providing school feeding or scholarships. Given the limited coverage of health insurance in many developing countries and the fact that many users of health services are required to pay high out-of-pocket payments despite having health insurance, insurance mechanisms will not suffice as standalone mechanisms.

In sum, when considering the role of social protection in preventing NCD, mechanisms should go beyond providing financial means to support access to health care. Many of the arguments calling for synergies between comprehensive health and social protection systems try to connect the provision of health care for the prevention, detection and treatment of NCD, with interventions that facilitate financial access to health services for poor households, as well as protect from ‘catastrophic’ expenditures and income shocks incurred by NCD (Adeyi, Smith and Robles 2007; United Nations General Assembly 2011). The few studies that go beyond the financial protection aspect of social protection also look at how social protection interventions can assist in raising awareness of health conditions, provide support mechanisms for caregivers, as well contribute to early detection and prevention of NCDs by linking them explicitly to health-care services (Lloyd-Sherlock *et al.* 2012).

With respect to the role of social protection in protecting against the adverse consequences of NCDs, it should be recognised that social protection is not only about health insurance. Although it is a key policy in preventing adverse consequences of NCD in terms of, for example, income loss, other programmes may have equally strong linkages to NCD. Cash transfers help to cope with the NCD and provide income protection following a health shock. Particular nutrition or school feeding interventions may play a role in prevention of NCD. We aim to consider the social protection system as a whole, and how different programmes interact with NCDs themselves as well as their adverse consequences. This is likely to involve the consideration of linkages to other sectors, most notably health.

3.2.2 Supply-side considerations

The pressures that the increasing burden of NCD is likely to place on health insurance and other social protection systems require supply-side considerations. Systems in developed countries are being stretched to their limits and have problems absorbing the increased need for care and treatment and the associated costs (ISSA 2013). Challenges in low-resource settings are compounded by the fact that systems are not yet in place and that the financial and human capacity to respond to the NCD burden is limited. It calls for innovative solutions at policy and implementation levels. A key in such supply-side considerations is building intra- and cross-sectoral linkages to join and harmonise efforts in preventing NCDs and tackling the adverse consequences of NCDs.

At policy level, crossing sectoral boundaries within the health and social protection sectors will be an important challenge. Sector development in health is often considered in vertical terms (linking the various steps involved in detection and control of one disease, such as HIV/AIDS) and horizontal terms (linking all the different functions of the health systems to create one coherent system). Another approach for intra-sectoral cooperation is a so-called ‘diagonal’ approach, whereby particular prevention and care activities in relation to a number of diseases are integrated. This more open approach for linking efforts within the health sector may also allow for entry points for other sectoral policies, including social protection.

Not only is the combination of social protection with complementary services imperative for achieving positive health outcomes – as discussed previously, financial support and increases in income through transfers or insurance are not enough in and of themselves for improving health outcomes – social protection may also be a particularly suitable vehicle for creating ‘systems’ linkages. For example, Forde *et al.* (2012) argue that cash transfer schemes have the potential to be an effective tool for collaboration across sectors due to their cross-sectoral objectives (for example, increasing economic productivity, empowering women, augmenting human capital), but also due to their contributions to health sector objectives.

With respect to considerations at the implementation level, the increasing burden of NCD and the strengthening of systems to respond to this burden require human resources to implement programmes and provide care. The practice of relying on community committees,

lay workers and volunteers to implement and deliver programmes and establish linkages across programmes is growing rapidly. This is potentially a second way of linking the supply of health and the supply of social protection by strengthening linkages 'on the ground', such as through the activities of community workers operating within a holistic framework. The untenable pressures on health systems in developing countries are increasingly recognised: 'The global shortage of health workers is a major challenge that is compounded by their inequitable distribution in terms of geography, profession and training. Integration of care pathways across different vertical programmes will be fundamental, with a need to shift the balance to primary and community care. There is a need to enhance the role of both health professionals and non-professional community workers in NCD prevention and control' (WHO 2011a: 9). WHO has increasingly mentioned community cooperation and involvement as crucial for prevention, promotion and treatment (WHO 2012a: 48). The cost of providing health care could thus be reduced by using peer-supported groups or trained lay people. Similar trends can be observed in the provision of social protection programmes, whereby the implementation and delivery of programmes is becoming increasingly reliant on community-based structures. The involvement of communities can range from taking part in targeting exercises (community-based targeting), assisting delivery of transfers, to mobilisation of resources.

Although the benefits in terms of bottom-up involvement, ownership and empowerment are widely recognised, a critical assessment of roles and responsibilities is required. Using voluntary community workers for the provision of social services is not unproblematic and there are limits to the types of services volunteers can provide and the extent to which social protection services can or should rely on volunteerism for the programme's implementation (Roelen and Long 2012). In relation to health services, concerns have been raised about the quality of services provided by community workers which have to be countered by government actions supporting training and quality control (WHO 2010a). Finally, the reliance on such informal mechanisms will become increasingly unviable due to processes of globalisation and urbanisation, as well as with an increasing ageing population.

In sum, the growing pressures on health and social protection systems in response to the expanding NCD burden require joint efforts to provide a sustainable response in the long run. Linking social protection and health care policies requires creative solutions and commitment. Rather than thinking about horizontal or vertical integration of policies, a diagonal approach could allow for integration of policies in a way that fits current needs and capacities.

The strong and growing reliance on community-based mechanisms in delivery of both health and social protection programmes needs to be injected with a healthy dose of realism. Although an attractive option in resource-constrained contexts, the limits of volunteerism and reliance on lay workers need to be duly recognised in seeking solutions for meeting supply demands in both health and social protection sectors.

3.2.3 From theory to practice

Despite the strong momentum around social protection across the globe, increased coverage in terms of scale and scope of programmes and rapid expansion on the evidence base of such programmes, limited information is available about the role of social protection in tackling NCD and how to join up social protection with other (most notably health) policies to provide an effective response. Following the previous discussion, we start from the premise that sectoral policies alone are insufficient to provide a solution. Income transfers may be part of an effective policy response but not when they are applied in isolation. Similarly, health insurance schemes can provide potential access to essential health services but are often limited in coverage and uptake, thereby only presenting a limited response to the issue of NCD.

This section discusses Ghana's integration of a national social protection and health insurance scheme as a case study and also provides a number of examples from other countries (policy integration in Mexico, health equity funds in Cambodia and community-based health insurance in Cambodia and Senegal) that give rise to lessons learned in thinking about the role of social protection in preventing and responding to NCD.

Ghana case study

A recent comprehensive analysis of NCD prevalence and risk factors in Ghana concluded that NCD is a pressing issue that will challenge the national health system due to the long-term costs related to treatment and care of NCD (Bosu 2013). The Government of Ghana has acknowledged this and has taken steps to address the associated challenges. This includes, for example, the inclusion of NCD prevention and control in the Ghana Shared Growth and Development Agenda (GSGDA), 2010–2013, and introducing a national NCD policy which aims to put the issue on the national development agenda. The policy will focus on five strategic areas: (i) primary prevention; (ii) early detection and clinical care; (iii) health system strengthening; (iv) research and development; and (v) surveillance of NCDs and their risk factors (Government of Ghana 2012).

The Ghana National Social Protection Strategy (NSPS) was established in 2007 and provides the framework for the implementation of a number of social protection programmes in Ghana. Ghana has a long history of formal social protection schemes (see Table 3.1). In the past, social security schemes have been the priority, serving workers in the formal economy. However, more recently, social protection programmes provide support for informal workers. This includes the extension of the Pension Act to include informal workers (Abebrese 2011), and the more recent social assistance programmes that have been introduced.

The different social protection programmes are implemented by multiple government agencies – Ministry of Food and Agriculture; Ministry of Health (MoH); Ministry of Education; Ministry of Local Government, Rural Development and Environment; Ministry of Manpower, Youth and Employment (MMYE); Department of Social Welfare (DSW); and the National Health Insurance Authority (NHIA). The NSPS assigns the overall coordinating role for social protection to the MMYE. In an attempt to increase coordination, a Social Protection and Livelihood Team (SPLIT) was formed, headed by the Ministry of Employment and Social Welfare, as well as a joint donor–government social protection and vulnerability group (Jones, Ahadzie and Doh 2009).

Table 3.1 Brief chronology of social protection in Ghana (selected data)

Programme/strategy/law and date	Subject matter
Social Security Act 1965	Provident Fund Scheme, lump sum payment for old age, invalidity and survivor's benefits
Social Security Law 1991	Conversion of the Provident Fund Scheme to a Pension Scheme (SSNIT)
National Health Insurance Scheme (NHIS) 2003	Introduction of a contribution scheme for the NHIS
Ghana School Feeding Programme 2005	One hot meal a day for every schoolchild
National Social Protection Strategy (NSPS) 2007	Several social protection programmes started under the strategy (e.g. LEAP)
Livelihood Empowerment Against Poverty (LEAP) 2008	Social cash transfer and free health insurance membership for vulnerable people

Source: Abebrese (2011: 4).

The National Health Insurance Scheme (NHIS)

The National Health Insurance Scheme (NHIS), established in 2003, is implemented by the National Health Insurance Authority (NHIA). Members of the scheme receive a card which provides access to essential services, the costs of which are then paid for by the scheme providers. Since 2008, all children under 18 and pregnant women get free access to the NHIS (Sultan and Schrofer 2008: 302, cited in Abebrese 2011: 5).

Enrolment in the NHIS has generally had positive effects on health-seeking behaviour and has increased the level of health care utilisation. Individuals enrolled in the insurance scheme are more likely to obtain prescriptions, visit clinics and seek formal health care (USAID 2009). Enrolment in the scheme also seems to reduce the likelihood of catastrophic payment and thus has a protective effect against the financial burden of health care (Nguyen, Rajkotia and Wang 2011). Due to its focus on pregnant women and orphans and vulnerable children (OVCs) the NHIS has also had positive effects on maternal and infant health indicators (Mensah, Oppong and Schmidt 2010).

Despite being a relatively progressive scheme with the objective of reaching a wide coverage, the NHIS has faced a number of implementation challenges. Firstly, in many instances, the demand created through the NHIS has surpassed the capacity of institutions to provide health services. Evaluations have found that the quality of care varied depending on the districts and that the registration process exceeded the official waiting time period (USAID 2009). Delayed payments by the NHIA for medical services delivered at the health centres have compromised the quality of health care and led to the refusal of patients in need of treatment (Baidoo 2009). Even for those who are exempt from the fees, lack of access to services due to remoteness is a further barrier to accessing the NHIS. Secondly, the high costs of premiums also seem to be an obstacle for the poor who are not included in the NHIS exemption policies as insurance by itself is not adequate to remove fully the out-of-pocket payment for health (Nguyen *et al.* 2011). As a result, the NHIS has failed to enhance access to health services for most social groups (Witter and Garshong 2009). The NHIS reaches only half the total population and membership is lowest among the poorest quintiles.

Livelihood Empowerment Against Poverty (LEAP)

The Livelihood Empowerment Against Poverty (LEAP) programme is a national social assistance programme implemented by the Department of Social Welfare (DSW) that aims to reach 165,000 households by 2015 (Government of Ghana 2012). It provides GHS24–45 (Ghanaian Cedi) to poor households with members that belong to vulnerable groups including:

- Caregivers of OVC (OVCs were initially identified as children infected or affected by HIV/AIDS, but other extremely vulnerable children are now included)
- Pregnant and lactating women
- Impoverished elderly
- Severely disabled
- Fisher folk and subsistence food crop farmers.

Programme beneficiaries are also automatically enrolled in the NHIS.

The size of LEAP transfer is relatively small – constituting less than 20 per cent of average household consumption – and is therefore unlikely to meet many of the health needs of the poor. Its combination with the NHIS, however, may allow for some of the out-of-pocket expenditures that otherwise form a barrier to utilisation of health services.

Despite the potential of combined efforts, improvements in health outcomes in Ghana are limited. Although coverage of NHIS has been greatly improved, there seems to have been limited progress in linking beneficiaries to complementary services (for example, expanded

programme of immunisation – or EPI) (DSW 2009, cited in Jones *et al.* 2009: 64). This can in part be attributed to weak cross-sectoral linkages which can be addressed through true joined up policy efforts. In interviews conducted with policymakers, Jones *et al.* (2009) found that the weak status of LEAP's coordinating body undermined its coordinating role and a stronger buy-in from more powerful ministries was needed for more efficient coordination (Jones *et al.* 2009: 50).

It is clear from the discussion above that despite the presence of well-established and linked health insurance and social cash transfer schemes in Ghana, the various components do not currently link up to provide a coherent and consistent response to fulfil the health needs and more specifically respond to the issue of NCD. Giving participants in a cash transfer programme automatic access to health insurance schemes does increase coverage of health insurance but does not guarantee improved health outcomes.

Integration

Lessons for stronger cross-sectoral linkages can be learned from countries with more advanced health and social protection systems, including Mexico. The positive impacts of the Oportunidades programme in Mexico show that when health and social protection policies are better integrated, social protection programmes can be an effective instrument in reducing both current poverty, as well as improving the future, through increased investment in their health. In addition to a cash transfer, Oportunidades' basic health package includes 13 personal and non-personal interventions, encompassing health promotion interventions, disease prevention and treatment of the most common ailments. Coordination is central to the success of Oportunidades. Having breaking the intergeneration cycle of extreme poverty as a main aim of the programme made inter-agency coordination between the Ministries of Social Development, Education and Health a requirement and the programme has strengthened the institutional architecture between them. The Mexican experience speaks to the potential to expand coverage to reach the poor and non-salaried workers through building on existing social and anti-poverty programmes that enable outreach and enrolment, such as Oportunidades.

Health equity funds (HEFs)

The increased pressures on financial and human resources within formal systems following the expanding NCD burden also require solutions building on the strengths of informal and community-based mechanisms. Health equity funds are funded fee-exemption schemes designed to help the poor overcome financial barriers to health care. The HEF reimburses health facilities for treating patients who are classified as too poor to pay and subsidises the poor for the costs of transport and food required during health-seeking episodes.

In Cambodia, HEFs are the country's major social protection mechanism (Annear 2008). Introduced in 2000, by 2010 HEFs provided coverage for the poor population in more than half of Cambodia's health districts (Annear 2010). The evidence that HEFs increase financial access to services for the poor and the near poor, reduce health costs and minimise impoverishment to households, and reduce out-of-pocket health expenditures is well documented (Annear 2010; Flores *et al.* 2011; Hardeman *et al.* 2004; Ir *et al.* 2010; Noirhomme *et al.* 2007). Cambodia has mostly relied on HEFs to finance health services for the poor and there is significant evidence that the demand-side approach works better than a simple fee exemption in improving equitable access to services. The evidence on the impact of HEFs on household health status and overall poverty, however, is less clear. HEFs appear to lessen the burden of health costs on the household, but the extent to which equity funds reduce household poverty is more difficult to establish.

HEFs appear in a variety of forms, but are generally implemented under Ministry of Health (MoH) guidelines, supported predominantly through donor funding, with some government funding. The lack of government funding means that Cambodia still faces significant

challenges in the long-term sustainability of HEF schemes, as well as correct and adequate identification of potential beneficiaries (Tangcharoensathien *et al.* 2011). However, it is suggested that indigenous community organisations rather than international NGOs are more cost-efficient in implementing HEFs and will enhance local ownership, increasing the likelihood of long-term sustainability. The capacity of the Royal Government of Cambodia to finance and expand the coverage of HEFs to the entire poor population, however, remains in question. To date, there is inadequate operational research on knowledge transfer and capacity building of HEFs administered by international NGOs transferring to potentially more sustainable local community organisations (NIPH Cambodia 2012).

Community-based health insurance (CBHI) schemes

Community-based health insurance (CBHI) schemes gained momentum in the early 2000s as a mechanism to better fulfil health-care needs of poor and vulnerable people in developing countries (Jutting 2003). CBHI schemes aim to fill the gap in coverage that is left by ineffective state and market provision of health insurance, particularly in rural and informal sectors. The schemes are based on the premise of risk-pooling and sharing of resources at community level, and can be organised independently or as part of more formal structures.

Cambodia has been experimenting with the implementation of voluntary CBHI programmes as a result of the sustainability concerns around HEF schemes. As the taxation system is not adequately developed in Cambodia to implement a government-sponsored social health insurance programme, CBHI provides an opportunity for risk-sharing where communities have essential roles in ‘mobilising, pooling, allocating, managing and/or supervising health-care resources’ (Jacobs *et al.* 2008: 140). Currently, CBHI schemes use a capitation system for health provider payment with HEFs purchasing premiums for the poor (Annear, Bigdeli and Jacobs 2011).

Results from an evaluation of a CBHI scheme in Senegal – *Les mutuelles de santé* – show that members visit the hospital more frequently than non-members and also pay less for such visits. Overall, the evaluation shows that community-financing through pre-payment and risk-sharing as part of the CBHI scheme lowers financial barriers to health care and reduces user fees (Jutting 2003). Formal social protection policies could reinforce this beneficial effect by strengthening households’ abilities to participate and pay into these schemes.

3.2.4 Lessons for the future

This review gives insight into the interface between NCD and social protection, and the potential of social protection to address the risk to NCD as well as respond to the adverse consequences of NCD. As highlighted in the conceptual framework, social protection programmes such as cash transfers can prevent NCDs, whilst insurance mechanisms can mitigate against the socioeconomic consequences of NCDs. This review also shows, however, that social protection instruments in and of themselves are not enough. Out-of-pocket expenditures, health behaviour and lack of awareness are factors playing into NCDs that cannot be addressed by social protection schemes alone. Complementary services are required to optimise the potential of social protection in addressing NCDs and prevent potential perverse incentives.

The need for complementary services and joint efforts in tackling NCDs requires intra- and cross-sectoral linkages. Such linkages are to operate at both the policy and bottom-up implementation level. Examples from elsewhere demonstrate that combining income transfers and health insurance schemes through more integrated approaches provide opportunities to expand the coverage of NHIS to reach poor and informal workers by building on existing social and anti-poverty programmes that enable outreach and enrolment. The Ghana case study shows, however, that simply providing access to a health insurance scheme to participants in a social protection programme is not enough by way of truly linking services towards improved health outcomes. A more integrated approach – such as is the

case in Mexico and the Oportunidades programme – has more promise in leading to positive outcomes. Potential solutions in light of increasing financial and human resource constraints include community-based solutions such as working with community-based health or social workers or implementing HEFs or CBHI schemes. Given the current mixed picture about potential benefits and negative side-effects, the appropriate implementation modalities of these schemes need further fleshing out. Challenges to greater integration include a lack of resources, capacity and coordination, which are all interlinked, and which all effect the establishment and sustainability of more integrated approaches.

3.3 Regulation and the agri-food industry

By Spencer Henson

3.3.1 Background

Economic growth and transformation in L&MICs is broadly associated with improvements in food security and the gradual elimination of dietary deficiencies, such that the overall nutritional status of the population is enhanced.¹ Simultaneously, however, there are qualitative changes in the production, processing, distribution and marketing of food, with consequences for dietary patterns and the lifestyle of consumers, not all of which are positive from a health perspective. Thus, changes in diet and patterns of work and leisure are amongst the factors driving the increased incidence of NCDs in many L&MICs (Popkin 1994).

As the structure and *modus operandi* of food markets in L&MICs become increasingly similar to those in many industrialised countries, greater attention is being given to the marketing practices of food businesses and the extent to which these contribute to the establishment of so-called ‘unhealthy’ eating patterns. Furthermore, there is evidence that governments in these countries are looking to ways in which they can direct the commercial practices of food businesses towards the promotion of ‘healthier’ foods, generally taken to be those lower in certain fats and added sugar and/or salt. This section describes briefly the transformations that are taking place in the food systems of L&MICs and the actions that governments are taking in response, from the perspective of NCDs. The case of South Africa is widely used to illustrate this.

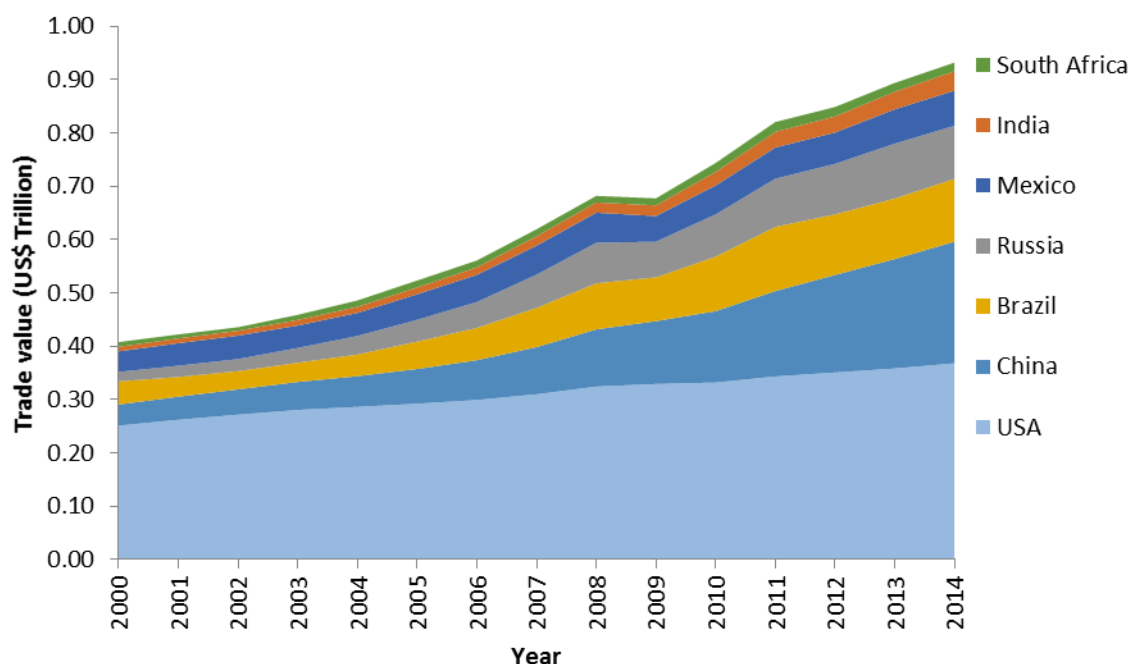
3.3.2 Evolving food consumption patterns

In the case of low- and (especially) middle-income countries, there are concerns about the health impacts of observed changes in food consumption patterns, which are increasingly mirroring those in the industrialised world. It is widely observed that rising incomes bring about greater dietary diversity, with a shift away from cereals and other starchy staples and towards fruit, vegetables, milk, eggs and meat that are more nutrient-dense (Vepa 2004). In turn, these changes usually contribute to the enhanced intake of key micronutrients. Simultaneously, however, we are observing a shift away from consumption of ‘traditional’ raw or semi-processed foods to packaged processed food products. As a result, over the past decade, global sales of packaged processed foods have doubled, reaching nearly US\$1 trillion in 2014 (see Figure 3.5). Sales of such products in Brazil, China and Russia were three to four times higher in 2012 than in 2002 (Euromonitor International 2014). Many of these processed foods are energy-dense and high in certain fats and added sugar and/or salt, and have been linked to rising rates of obesity and the growing incidence of NCDs such as diabetes and heart disease in L&MICs (Monteiro and Cannon 2012).²

¹ It is important to realise, however, that there is an imperfect relationship between growth in income and the decline in nutritional deficiencies, especially in the case of micronutrients, recognising the wider complex of factors influencing access by the poor to nutritious foods and their propensity to purchase and consume such foods.

² At the same time, it is important to recognise other lifestyle and environmental changes, for example, a shift towards more sedentary occupations, exposure to environmental pollutants, etc.

Figure 3.5 Estimated growth* in sales of packaged processed foods in selected countries, 2000–14



Note: *Year-on-year exchange rates.

Source: Based on data from Euromonitor International (2014).

A further trend being observed, especially in middle-income countries, is the increased consumption of food outside the home, and especially of ready-to-eat so-called ‘fast’ foods. In Brazil, for example, around 40 per cent of food is consumed outside the home, although with a much higher level amongst men (47 per cent) than women (35 per cent). Again, many of these foods are energy-dense and high in certain fats and added sugar and/or salt. Thus, amongst men, consumption of food outside the home has been positively associated with overweight and obesity, although this relationship is less apparent in women (Bezerra and Sichieri 2009).

3.3.3 Changing food and beverage markets

The broad changes in dietary patterns outlined above have mirrored, and reflect changes in, the transformation of the organisation and *modus operandi* of food markets in L&MICs. Thus we are seeing a decline in the role of traditional food markets, small food processing enterprises, neighbourhood stores and street sellers of food, reflecting the growth of commercial food processing businesses, supermarkets and food service operators. At the same time, national food markets are becoming increasingly globalised through greater trade in food products and foreign direct investment (FDI) by global multinational food-processing and retailing businesses, amongst other factors.

The rise of supermarkets in middle-income countries has perhaps been most dramatic. In Brazil, for example, supermarkets accounted for 75 per cent of food retail sales as early as 2000, with 91 per cent of market share of supermarkets in the hands of multinationals (Reardon and Berdegue 2002). The rapid growth of supermarkets has also been observed in various parts of Asia, including China (Reardon *et al.* 2003).³ Whilst supermarkets have tended to target high- and middle-income consumers in urban centres and were quick to dominate markets for packaged processed foods, there is evidence that they are bringing

³ Although less so in India due to government restrictions on FDI in the sector (Pingali and Khwaja 2004).

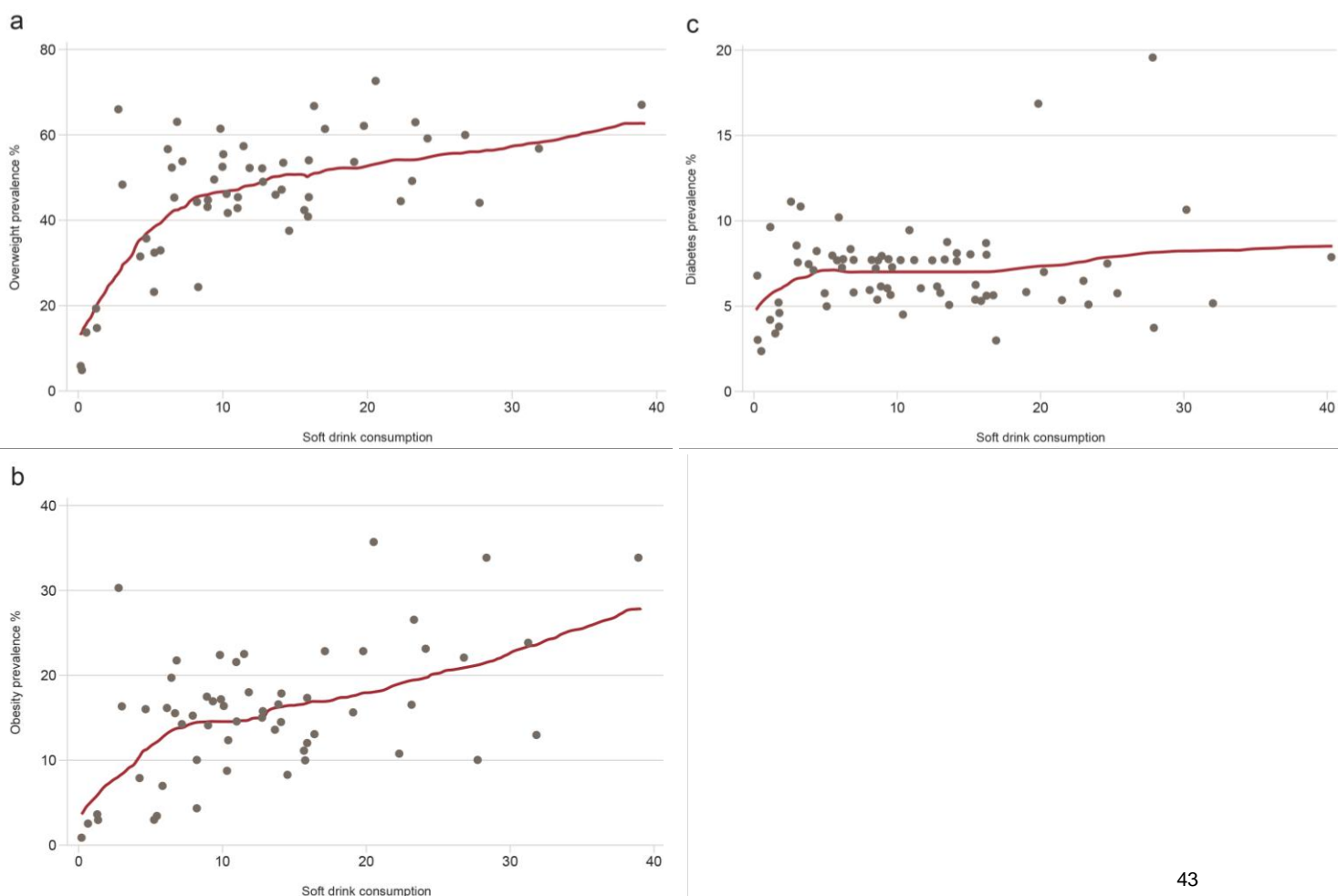
about changes in food systems in middle-income countries more generally, including for staples that are mainly purchased by the poor and in smaller urban and rural areas.

The growth of supermarkets, alongside the more general trends of urbanisation and the development of transportation and communication infrastructures, has induced changes across the food system. Perhaps most notably here is the evolution of industrial food processing. Certainly, the establishment of larger food-processing businesses usually brings about economic efficiencies, which can feed through to lower prices that are most beneficial to the poor, and enhanced food safety and quality. However, such businesses are generally engaged in the manufacture and marketing of packaged processed foods. Whilst these foods may offer nutritional benefits to consumers, as in the case of fortified cooking oil or flour, they can also bring about adverse dietary changes, such as increased consumption of sugar, salt and certain fats, which are implicated in the increasing incidence of NCDs.

Sugary soft drinks provide an example of the rapid evolution of markets for packaged processed foods in L&MICs. This is arguably one of the most worrying trends from an NCD perspective. Thus, whilst the evidence is contested by some, the increased consumption of sugary soft drinks has been associated with rising obesity rates in many countries. For example, at least 20 per cent of the weight gain amongst Americans over the period 1977–2007 has been attributed to consumption of sugary soft drinks (Woodward-Lopez, Kao and Ritchie 2011). In the case of L&MICs specifically, Basu *et al.* (2013a) observe a strong relationship between sugary soft drink consumption and the prevalence of diabetes (Figure 3.6).

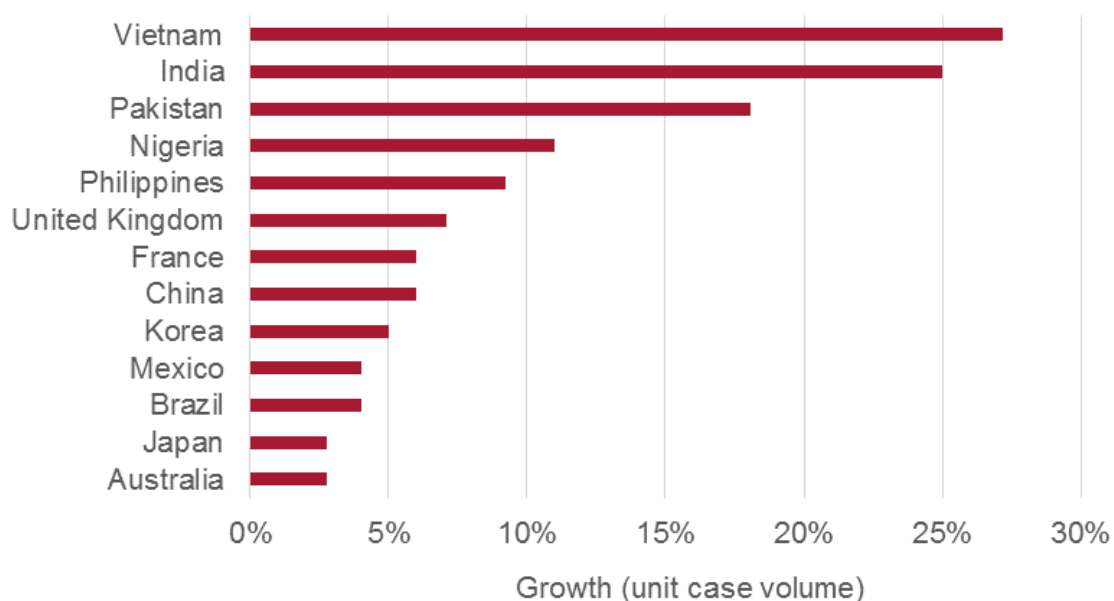
Figure 3.6 The relationship of soft drink consumption to prevalence of (a) overweight among adults older than 20 years, (b) obesity among adults older than 20 years, and (c) diabetes among adults aged 20–79 years

Source: Adapted from Basu *et al.* (2013a).



Industry analysts estimate that soft drink consumption in L&MICs will rise by almost 16 per cent over the next five years, compared to around 10 per cent globally (Euromonitor International 2011). The global market for soft drinks is dominated by multinationals, in particular Coca-Cola and PepsiCo. Such companies clearly see L&MICs as the key growth market for their products, as is shown (for example) by projected growth rates in Coca-Cola's own annual market review (Figure 3.7). Thus, these companies are implementing strategies aimed at expanding consumption in such markets, including distribution to small retailers in both urban and rural areas, investment in coolers and the development and dissemination of point-of-sale marketing materials. Where these efforts have been made previously, for example in Mexico and South Africa, high rates of soft drink consumption have resulted.

Figure 3.7 Projected growth rate in Coca-Cola unit case sales in selected countries, 2009



Source: Adapted from the Coca-Cola Company (2009).

3.3.4 The case of South Africa

To illustrate these trends, this section explores the evolution of the food system and dietary patterns in South Africa. In Section 3.3.5 the various regulatory options are also illustrated with reference to South Africa.

Over time, the South African diet has changed fundamentally as incomes have risen, the structure of the agri-food system has transformed and become more internationalised, and consumer attitudes and expectations with respect to food have changed. Thus, over the period 1985–2009, consumption of meat, vegetable oils and eggs has increased substantially, whilst consumption of vegetables, milk and dairy products, alcoholic beverages and sugar and sweeteners has declined (Table 3.2).

Table 3.2 Apparent food consumption (kg per capita/year) in South Africa, 1985–2009

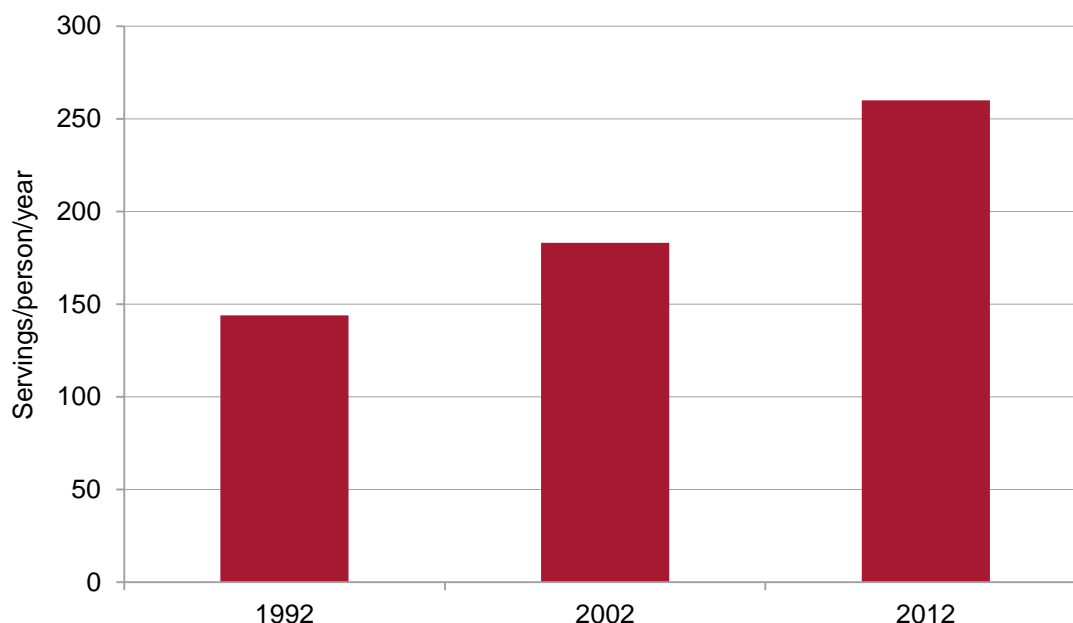
Product group	1985	1990	1995	2000	2005	2009
Cereals	182.5	174.7	179.3	187.7	188.3	182.3
Starchy roots	25.5	27	25.3	30.6	30.1	30.6
Sugar and sweeteners	40.2	36.7	33.2	32.2	31.0	31.0
Pulses	2.9	3.1	3.8	3.0	2.8	3.6
Vegetable oils	9.3	9.1	11.1	11.7	14.3	14.0
Vegetables	49.8	46.1	45.4	41.6	42.3	42.9
Fruit	33.1	39.4	32.8	44.4	35.3	34.8
Alcoholic beverages	78.6	88.7	70.7	70.6	65.2	75.3
Meat	37.6	40.7	37.4	41.7	46.3	58.6
Eggs	4.2	4.3	4.6	5.4	5.8	6.7
Milk and dairy products	58.1	59.8	56.5	53.3	56.0	55.3
Fish and fishery products	8.6	9.6	8.6	6.1	8.6	7.5

Source: Reproduced with data from FAOSTAT (2013).

Within these broad food categories there have also been fundamental shifts in consumption patterns, for example consumption of rice has increased from 5.5kg/person/year in 1985 to 14.8kg/person/year in 2009. Consumption of beef has declined from 19.4kg/person/year in 1985 to 15.4kg/person/year in 2009, whilst poultry meat consumption more than tripled over this period from 9.7kg/person/year to 32.0kg/person/year.

In parallel and reflecting these trends, there has been an increased consumption of processed foods, including food prepared and consumed outside the home. For example, there has been a rapid increase in consumption of soft drinks, as indicated by the average annual servings consumed of beverage products manufactured by Coca-Cola, which has a market share of around 75 per cent of the soft drink sector in South Africa (Figure 3.8). Estimated total annual consumption of soft drinks (including mineral water) in 2012 was 116 litres/person/year, compared to a global average of around 82 litres/person/year (Zenith International 2008; Soft Drinks International 2010). It is further noteworthy that consumption of Coca-Cola beverage products in South Africa exceeds that in many European countries. Importantly, consumption of these products starts at a very early age. Thus, Theron *et al.* (2007) report that cold carbonated drinks are the third most commonly consumed food/drink item among urban South African children aged 12–24 months, following maize meal and brewed tea but ahead of milk. Further, in remote rural areas in KwaZulu-Natal Province children aged 4–24 months were consuming soft drinks two to three times per week (MacKeown and Faber 2005).

Figure 3.8 Average consumption of Coca-Cola Company beverage products in South Africa, 1992–2012

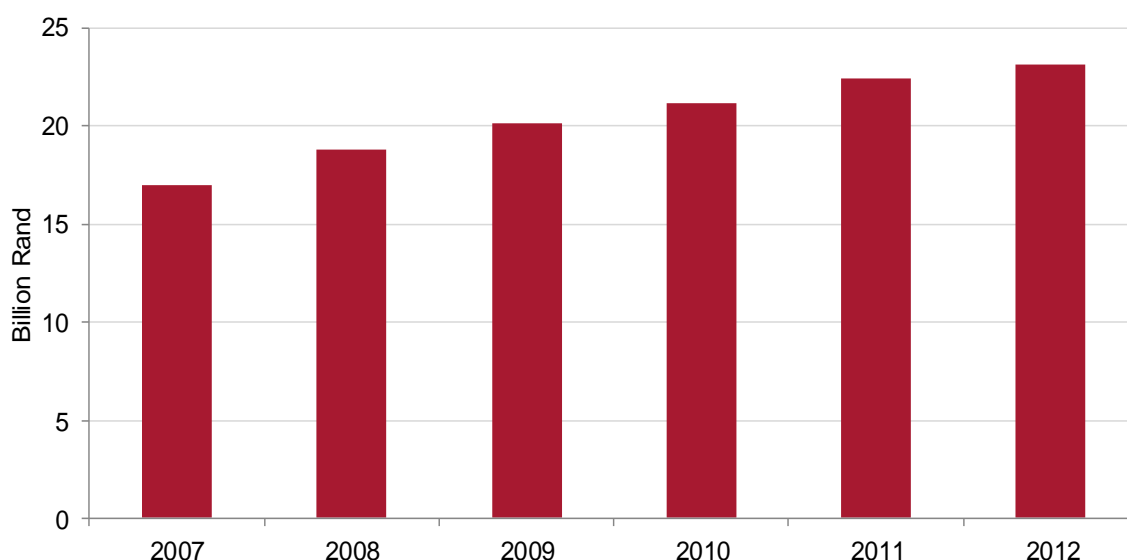


Note: 1 serving = 0.25 litres.

Source: Based on data from the Coca-Cola Company (2013).

The transformation of the South African diet is also well illustrated by the increased consumption of fast food. Whilst street food has long been a part of life in South Africa, and especially of those with lower incomes, fast foods produced and distributed by formal sector firms, including national and international chains, is a more recent phenomenon. Thus, despite its relatively high price, fast food consumption even amongst the poor is evidently increasing rapidly. For example, in a recent study of fast food consumption by young adults in Johannesburg (Van Zyl, Steyn and Marais 2010), almost half of employed young adults spent more than R200 on fast food per month. Further, 21 per cent of those questioned had fast food at least once a week, whilst 28 per cent consumed it two to three times a week. In a further study of children and adolescents in Soweto (Feeley, Pettifor and Norris 2009), nearly 40 per cent visited a fast food outlet between one and three times a week, with 35 per cent visiting such outlets between four and ten times a week. The most popular food items were burgers, pizza and fried chicken, whilst soft drinks were the most common beverage consumed. In 2012, sales by fast food chain restaurants in South Africa were valued at over R23 billion (Figure 3.9).

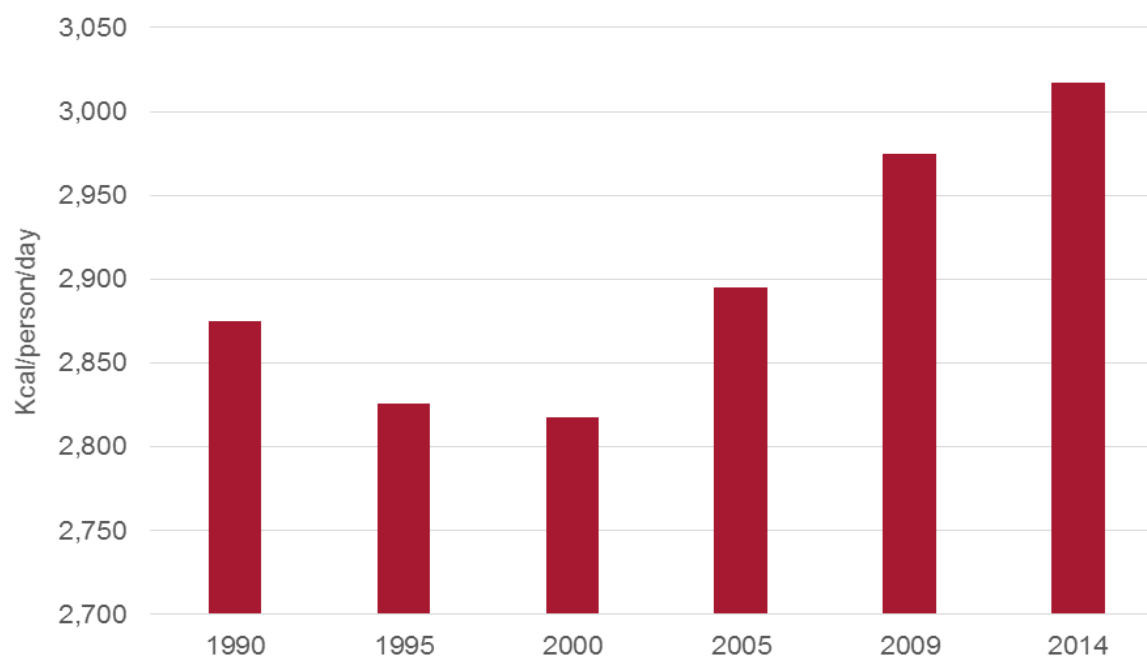
Figure 3.9 Size of market for chained fast food in South Africa, 2007–12



Source: Based on data from Euromonitor International (2014).

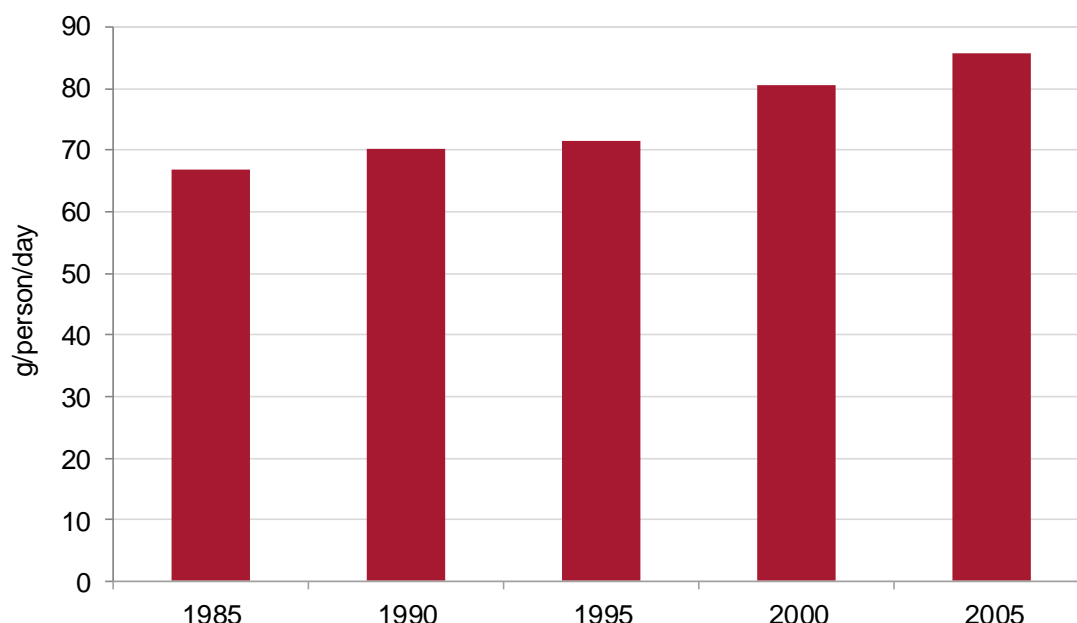
These dietary changes have brought about an adverse shift in the nutritional quality of the diet in South Africa that have been linked to risk factors for NCD. After a decline from 1990 to 2000, dietary energy intake increased substantially to reach 3,017Kcal/person/day in 2014 (Figure 3.10). Over the period 1985–2005, dietary fat intake increased from 67.8g/person/day to 85.7g/person/day (Figure 3.11).

Figure 3.10 Apparent consumption of dietary energy in South Africa, 1990–2014



Source: Based on data from Euromonitor International (2014).

Figure 3.11 Apparent consumption of dietary fat in South Africa, 1985–2005



Source: Based on data from Euromonitor International (2014).

These dietary trends are associated, at least in part, with the escalating obesity rate in South Africa. In 2009, an estimated 18.1 per cent of South African adults were obese (OECD 2012). This compares to 23 per cent of UK adults, but only 16 per cent of adults in Russia, 14 per cent of adults in Brazil, and 2 per cent of adults in India. Obesity is very much skewed towards the female population, with an estimated 27 per cent of women in South Africa being obese in 2009, but only 9 per cent of men. Of particular concern is the increasing rate of overweight and obesity amongst adolescents. Whilst 24 per cent of adolescent women were estimated to be overweight in 2002, by 2008 this had increased to 29 per cent (Reddy *et al.* 2012). Rates of obesity amongst adolescent women were estimated at 5 per cent in 2002 and 7.5 per cent in 2008.

The sodium (salt) content of the South African diet has also increased rapidly over time and is of great concern due to links to hypertension. The average salt intake of adults in South Africa is estimated at 8g/person/day (Bertram *et al.* 2012). This is significantly higher than WHO's recommended maximum of 4–6g/person/day. It is estimated that around 60 per cent of all salt consumed in the South African diet is non-discretionary in that it is consumed in processed food products rather than being added during cooking or consumption. The single food contributing most to salt intake is bread.

3.3.5 Approaches to regulation

The foregoing discussion suggests that the profound changes undergoing food markets in L&MICs, and related shifts in food consumption patterns, potentially raise significant nutritional and health issues. Thus, it is perhaps not surprising that those concerned with the rising incidence of NCDs in these countries have raised 'alarm bells' over the impact of commercial food businesses, and argued for robust action on the part of government, often in the form of regulation. It is important to recognise, however, that NCDs are multi-factorial in nature, such that dietary change is just one of the factors underlying trends in NCDs. It should also be noted that the marketing practices of food businesses are not the only driver of the observed changes in food consumption behaviour.

Whilst the marketing efforts of food businesses might indeed be facilitating and encouraging the increased consumption of foods that are considered 'unhealthy' in L&MICs, laying out a *prima facie* case for government action of some kind, defining an effective and economically and politically acceptable policy framework is far from straightforward. Such actions might involve engagement between the public and private sectors at one extreme, to regulation at the other. Further, the focus might be on facilitating informed consumer choice (for example, through labelling) or applying restrictions to the marketing efforts of food business (for example, prohibitions on the advertising of 'unhealthy' foods to children). These various policy mechanisms are reviewed below, with illustrations from select middle-income countries, most notably South Africa.

Facilitating 'better' consumer food choices

The rationale behind actions aimed at facilitating consumer choice is that consumers are ill-informed about the nutritional composition and/or potential adverse health effects of foods that are high in added sugar or salt, for example. Thus, by enhancing the awareness and knowledge of consumers, and by enabling them to distinguish between 'healthy' and 'unhealthy' foods, it is assumed that more 'appropriate' dietary choices will be made.

Efforts to promote consumer choice typically consist of a blend of nutrition labelling requirements and information campaigns. In the case of nutrition labelling, countries have variously adopted voluntary or mandatory requirements. The former generally stipulate the content and/or format of nutrition labels should food businesses choose to use them. Mandatory nutrition labelling requires food businesses to use such labels for all foods or in particular circumstances (for example, if nutrition-related claims are made about the product).

In 2010, South Africa implemented regulations governing nutrition labelling of packaged foods. A standard format is defined for nutrition labels, although the use of nutrition labelling itself is voluntary except where a nutrition-related claim is made. This is in stark contrast to Brazil, for example, where nutrition labelling has been obligatory since 2001. It is noteworthy that Brazil has led the development of a nutrition fact labelling system for the whole of Mercosur.

There are relatively comprehensive controls on nutrition claims in South Africa. Thus, strict criteria are defined for the use of terms such as 'rich in', 'excellent source', 'good source', 'enriched with X', 'with added X', 'X-free', and the use of descriptors such as 'nutritious', 'healthy', 'wholesome', 'complete nutrition' and 'balanced nutrition'. More generally, there are restrictions on the use of images, logos, marks and descriptors that imply a product has been endorsed by a health practitioner or organisation such that they act as implicit claims.

Whilst nutrition labelling remains voluntary, a number of national and international food businesses do routinely include these labels on their packaging. Furthermore, some larger companies are using guideline dietary amount labels, as is widely seen in industrialised countries and emerging economies such as Brazil.

A number of low- and (especially) middle-income country governments have defined *dietary guidelines* for their citizens that outline healthy food choices in the context of local food norms. For example, food-based dietary guidelines have been developed and adopted for South Africa. The initial impetus for these guidelines was the Nutrition Society of South Africa in 1997, although at a relatively early stage a wider working group was established with representation from the nutrition and medical communities, government, agriculture and the food industry, etc. (Vorster, Love and Brown 2001). The guidelines were ultimately officially adopted and published by the Department of Health in 2004 and apply to healthy South Africans aged six years and older (Department of Health 2004). More recently, guideline amounts for consumption of key food groups have been established and published in line

with them, and are broadly in line with those of a number of industrialised and developing countries, including Brazil.

Restricting the marketing of ‘unhealthy’ foods

For much of the public health community, efforts to promote consumer choice do not go far enough. Thus, despite the best intentions of labelling and information/education campaigns, evidence suggests that consumers have a high propensity to make inappropriate food choices. Furthermore, the marketing efforts of food businesses can tend to ‘drown out’ public health messaging. These observations present a case for governments to restrict the marketing of ‘unhealthy’ foods in some way, by laying down compositional standards that constrain the level of undesirable ingredients in food, limiting the advertising and/or more broadly marketing of ‘unhealthy’ foods, and applying price measures. Each is described in turn below.

An area where South Africa has taken particular tough action is the nutritional composition of ‘unhealthy’ foods, most notably with respect to trans-fats and salt. Indeed, especially in the case of salt, South Africa stands out as one of the very few countries that have implemented legally-mandated limits. In 2010, regulations were implemented that limit the trans-fat content of processed foods marketed in South Africa to less than 2g per 100g of the end product. This limit became enforceable in 2011. It applies to foods both manufactured in South Africa and imported.

Regulations limiting the salt content of a wide range of processed foods in South Africa were published in 2012. These regulations define a maximum sodium threshold for these foods with the aim of reducing salt intake in South Africa to 5g/person/day by 2020. Due to industry lobbying, the thresholds for some foods have been raised, and the compliance deadline has been put back to 2018–19, although with some initial targets needing to be met in 2016. It is noteworthy that, of the 33 countries with salt reduction targets reviewed by Webster *et al.* (2011), only two have legally-mandated requirements for product reformulation in the same manner as South Africa (namely Argentina and Portugal).

It should be noted that some public health practitioners are sceptical about the efficacy of compositional standards in bringing about more desirable dietary choices. Thus, compositional standards effectively enable food businesses to promote their (reformulated) products as ‘healthy’. The implication is that consumption of packaged processed foods may be promoted over raw or semi-processed foods, perhaps with adverse impacts on the overall nutritional composition of the diet (Monteiro and Cannon 2012).

Much of the focus of efforts to restrict the marketing of ‘unhealthy’ foods has focused on children. Indeed, proposals to restrict television advertising to children have been made in a number of countries, including Australia, Brazil, France, Germany, India, Ireland, Italy, Malaysia, New Zealand, Poland and the UK. Internationally, the International Obesity Task Force (IOTF) has proposed that advertising of ‘inappropriate foods and drinks’ to children be prohibited (IOTF/EASO 2002).

In South Africa, there is a great deal of concern about the diet of children given the observed rapid increase in consumption of soft drinks, snack products, fast food, etc. and links to rates of obesity. To address this problem, the South African government published draft regulations in 2007 that would have restricted the advertising of foods that were seen as being not essential to a healthy lifestyle (Igumbor *et al.* 2012). These regulations were subsequently put on hold, reflecting the heated debate that ensued in South Africa, whilst international agreement was reached on the WHO Set of Recommendations on Marketing Food and Non-Alcoholic Beverages to Children.

Perhaps fearing regulatory action, the food industry itself has taken voluntary action to restrict food advertising to children in South Africa. In 2009, the industry issued a pledge on

food marketing to children, although the implementation of this pledge was not monitored. Further, in 2013, the Advertising Standards Authority of South Africa published a voluntary code of advisory practice on advertising certain food and beverage products to children under 12 years of age. The broad principle of the code is that food businesses cannot encourage poor nutritional habits or an unhealthy lifestyle, and condone or encourage excess consumption of food. The code covers marketing on television and in or near to preschools and primary schools.

To date, 31 food businesses have signed-up to the code, including food manufacturers and food service companies. At the same time, a number of larger food businesses have their own codes of practice on advertising aimed at children. For example, Kellogg's code precludes advertising of any type to children under the age of six, and restricts advertising of products with certain nutritional attributes to children under the age of 12 years.

Finally, many of those concerned with public health aspects of NCDs have advocated for the use of taxation as a means to promote consumption of more 'healthy' foods. Indeed, in November 2013 the Lancet Commission on Investing in Health supported the use of taxation to curb the spread of NCDs globally. Indeed, the results of a number of empirical studies suggest that there are potentially significant health benefits from such measures.⁴ However, many of these studies are hypothetical in nature, in that they model what is likely to happen if price measures are employed⁵ rather than analyse *ex post* what has actually happened when they have been employed.

A recent example of the use of taxation as part of efforts to dissuade consumers from consuming 'unhealthy' foods is provided by Mexico. In October 2013, Mexico's congress approved a ten per cent tax on sugary soft drinks as part of efforts to address the high prevalence of obesity in the population. This tax amounted to around one peso (US\$0.08) per litre (*Latin Times* 2013). The estimated 15 billion pesos (US\$1.2 billion) tax revenues are intended to be used for drinking water in schools (*The Guardian* 2014b). Given the recent implementation of the tax, it is not yet possible to ascertain its impact. However, it is noteworthy that, in response, Coca-Cola replaced cane sugar with the cheaper sweetener high-fructose corn syrup in order to offset the tax (Quartz 2013).

Price-based measures have, however, been used in relatively few countries, and generally at a limited scale, reflecting the inherent political and practical difficulties of implementing such measures. Furthermore, there are concerns at the regressive nature of sales taxes, which impose the greatest burden on the poor who spend a relatively large proportion of their income on food.⁶ Importantly, the regressive nature of such taxes is independent of the form in which they are implemented; as a flat rate on particular 'unhealthy' foods or according to the level of some undesirable ingredients such as sugar, fat, etc. Thus, it is important to recognise that increases in food prices can have an adverse and significant impact on the poor, regardless of the objective of the policy instrument.⁷

⁴ From the results of a meta-analysis of nine studies, Escobar *et al.* (2013) show that an increase in the price of sugary soft drinks is associated with a decrease in consumption; further, the greater the price increase, the greater the reduction in consumption. Six articles in this meta-analysis from US studies show that a higher price can lead to a decrease in BMI and in the prevalence of overweight and obesity. In a separate modelling study, Basu *et al.* (2014) show that a 20 per cent excise tax on sugary soft drinks could be expected to prevent 11.2 million new cases of overweight and obesity (a 3.0 per cent decline), and 400,000 cases of type 2 diabetes (a 1.6 per cent decline) among various Indian subpopulations over the period 2014–23.

⁵ For example, Basu *et al.* (2013b) employ a micro-simulation model of the market for palm oil in India. They predict that a 20 per cent tax on palm oil would avert approximately 363,000 deaths from myocardial infarction and stroke over the period 2014–23, accounting for 1.3 per cent reduction in cardiovascular deaths, assuming that consumers do not substitute other oils for palm oil. The tax is predicted to benefit men more than women and urban populations more than rural populations, given different levels of palm oil consumption and cardiovascular risk.

⁶ Using a hypothetical tax model, Leicester and Windmeijer (2004) show that the poorest households lose around seven times more, as a proportion of income, than the richest households assuming there is no behavioural change.

⁷ For example, in a study of 58 developing countries, Ortiz, Chai and Cummins (2011) found that rising local food prices can aggravate both poverty and inequality.

Reflecting these issues and problems, some advocates have argued for more refined systems of taxation than the rather blunt instrument applied in (for example) Mexico. For example, Bishai (2014) has proposed a tax targeted at food manufacturers and which focuses on the nutrient composition of foods. Such a system would apply differential tax rates to products according to their nutrient composition; for example, higher rates for sugar and salt. It is argued that manufacturers would respond by reformulating their products, such that the end price to consumers would not necessarily change. Of course, there are certain caveats that may influence the outcome of such a system. For example, the reformulation of food products may entail the use of more expensive ingredients (which will presumably lead to higher market prices) and/or could alter the organoleptic characteristics of the products (which could influence consumer demand aside from any changes in price).

3.3.6 Engaging with food businesses

In the face of rapidly escalating incidence of NCDs in low- and (especially) middle-income countries, alongside the restructuring of food systems and changing food consumption patterns, it is natural to look to the impact of food businesses through their food marketing activities. On the one hand, it is legitimate to ask whether the actions of food businesses are a key factor in promoting 'unhealthy' eating patterns and are undermining the efforts of public health officials to promote 'healthier' diets. The expectation that food businesses will 'do no harm' in this context is not unreasonable. On the other hand, there is a need to explore ways in which food businesses can contribute to efforts to promote 'healthy' eating as well as lifestyles more generally, and thus the extent to which food businesses can (and should be expected to) 'do good' from an NCD perspective.

Predominantly, the relationship between the public health community and food businesses (and especially large multinationals) has been adversarial. Many public health practitioners view food businesses with great suspicion, pointing to previous misdemeanours (notably the inappropriate marketing of infant formula) and dubious practices,⁸ and the aggressive marketing of sugary soft drinks, fast food and other 'unhealthy' foods. Thus, much of the debate has focused on the need for regulation and/or pricing measures aimed at disciplining food businesses. Certainly, these may play a role, although their impact in practice is often untested, but they impose costs on the food system that must be borne by someone, and the capacities of many L&MICs to implement regulations and/or price mechanisms tend to be weak. This suggests that alternative approaches should also be considered, and tested, including co-regulation and public-private partnerships.

Arguably, a more appropriate starting point, therefore, is to examine the incentives for food businesses to manufacture, distribute and/or market less versus more 'healthy' foods, and then to look to ways in which these incentives can be better aligned with public health priorities. In so doing, the specific nature of the food system needs to be considered, including the role of particular food businesses (both big and small and across both the formal and informal sectors), the interrelationships between these businesses and how this is all changing over time. Critically, the selection of measures to be employed should be based on empirical evidence of what works in particular (and usually imperfect) contexts rather than preconceived ideas and/or ideological perspectives on the role and/or impacts of food businesses.

⁸ Moodie *et al.* (2013) review the literature on the strategies used by tobacco, alcohol, and processed food and beverage manufacturers and present evidence of attempts to undermine effective public health policies and programmes. They contend that there is evidence across these industries of various 'dubious' practices, thus: attempts to bias research findings; recruiting policymakers and health professionals and lobbying politicians and public officials to oppose public regulation; encouraging voters to oppose public health regulation; avoiding criticism through promoting actions outside these industries (for example, preventing violence against women and encouraging physical activity). Additionally, these industries are often co-owned by common parent companies, have shared executive directors, use the same public relations firms to lobby worldwide and to design stakeholder marketing campaigns.

Globally, there are signs that food businesses are beginning to engage with governments on the NCD agenda, whether out of a genuine recognition of the need for action or to pre-empt greater regulation.⁹ For some, such initiatives are viewed as damage limitation exercises which are eroding the duty of governments to protect public health (Monteiro, Gomes and Cannon 2010; Moodie *et al.* 2013). Arguably, however, any form of engagement is better than none at all. The challenge, having 'started to talk', is to push food businesses into more concerted, challenging and costly actions. There is likely to be much more success in such endeavours if policymakers appreciate the business perspective and are 'armed' with evidence as to which measures work best in particular circumstances.

A key theme of the discussion above is the need for empirical evidence; the testing of particular measures in terms of their impact on business behaviour and the ultimate dietary choices of consumers. Broadly, there is a paucity of such research, especially in the context of L&MICs. Much of the evidence that does exist is based on hypothetical scenarios under simplified assumptions. There is a need for rigorous analysis of field-based experiments that demonstrates impact in practice in diverse L&MICs; the extrapolation of results from industrialised countries with distinct market and institutional contexts are arguably of limited utility in this regard.

⁹ The International Food & Beverage Alliance (IFBA), a trade group of ten multinational food businesses including Coca-Cola, Mondelez and Nestlé, has committed to making healthier food products, advertise food responsibly and promote exercise. More specific pledges are being made in rich countries, where obesity rates are higher and scrutiny is more thorough (IFBA 2011). In the UK, 21 companies have struck a 'responsibility deal' with the Department of Health which commits them to helping people consume fewer calories. Likewise, in the US, 16 companies have promised to cut 1.5 trillion calories from their offerings by 2015, an amount based on a rough calculation of how much the average American should cut from his or her diet to be healthy.

3.4 Governance and NCD

By Andrés Mejía Acosta

With respect to questions of governance related to pursuing an NCD agenda, a key factor to consider is the social and economic rationale for government intervention. A clear argument has to be made as to why governments need to intervene, in this instance, to change people's lifestyle choices to healthier ones. Furthermore, it is necessary to consider what potential avenues exist for a government to fund and manage strategies to address an NCD burden, including from taxation. Finally, should the issue be addressed by the public sector alone, or should ministries rely on and build alliances with other sectors? For example, should governments be crafting policies that proactively engage the private sector, and might there be a role for civil society organisations in advocating for policies or monitoring the progress of government interventions?

This section of the report will address these overarching governance questions by examining the agenda pursued by the Brazilian government to address a rising burden of NCD. General points will then be drawn for other L&MIC settings.

3.4.1 Improving the health sector in Brazil: high-level commitment

The Brazilian state has received recognition for prioritising progress towards universal access to health care within the Sistema Unico de Saude (SUS, Unified Health System) and was a leader in state action against HIV/AIDS in the 1990s, with commitment to a state antiretroviral programme. More recently, Brazil has recognised the 'double burden' and has also mobilised government commitment to addressing NCD. With the increased focus on NCD, policies implemented have widened the scope of action from the traditional concern of medical care provision, to prevention, health promotion, and inter-sectoral action. The emphasis has been on risk factor modification, improved surveillance for early detection, and primary care and community participation.

In 2006, after discussion and agreement by representatives at federal, state, and municipal levels, a broad health promotion policy was approved. The policy included a series of actions in inter-sectoral articulation and policy development, health education, disease and risk factor monitoring, and health care provision centred on healthy diets, physical activity, reduction of smoking, and the harmful use of alcohol. In support of these health initiatives, the Ministry of Health (MoH) transferred R\$5 million (about US\$2 million) to 27 state capital cities in 2005. By 2009, the allocation increased to R\$56 million (about US\$25 million), distributed on a competitive basis to 1,277 states and municipalities. This initiative has been seen to merit expansion within a framework that stimulates adoption of effective interventions (Schmidt *et al.* 2011).

Early efforts also broadened the government nutrition agenda from the historical focus on undernutrition to an integrated agenda for nutrition. The 1999 National Food and Nutrition Policy makes clear the need to promote healthy diets and active lifestyles (MoH 2013). In accordance with the recommendations of the Global Strategy for Diet, Physical Activity, and Health (WHO 2004a), this policy recognises the complex nature of nutrition-related NCDs, and states a set of actions for health and related sectors to provision environmental initiatives which will support healthy diets and active lifestyles for the whole population (Schmidt *et al.* 2011).

In 2011, in articulation with global efforts, the MoH came up with the Strategic Action Plan to Tackle NCDs in Brazil, 2011–2022, which combines actions by the health sector with those by several other sectors. Many representatives from social sectors have participated in the

preparation of this action plan, which constitutes another tool for incorporating the issue of NCD prevention and control into the political and government agenda. The broad objectives of the plan are to promote the development and implementation of effective, integrated, sustainable, and evidence-based public policies with the purpose of NCD prevention and control, besides strengthening health services which deal with chronic diseases. The plan aims at reducing morbidity, disability, and mortality caused by NCD, through a set of preventive actions and health promotion, combined with early diagnosis and timely treatment, and with the reorganisation of health services within the Unified Health System (MoH 2011).

The action plan aims to promote and support the development and strengthening of NCD integrated surveillance and its modifiable protective and risk factors by improving tools aimed at monitoring these factors, based on national and local surveys. Cross-sectoral health promotion initiatives at public and private levels include developing linked interventions and actions to encourage and promote the adoption of healthy behaviour and lifestyle. The directive is that these should become priority at national, state, and municipal levels. The plan also aims to address social and economic determinants of NCD. Further, it aims to provide the population with alternatives to enable the cultivation of healthy behaviours throughout life and the prevention of obesity. Finally, the state has focused on strengthening the response capacity of the Unified Health System, with the expansion of a set of diversified interventions capable of providing an integrated health approach to prevent and control NCD (MoH 2011). Significantly, there has also been an effort to integrate nutrition information within other health programmes and food security interventions.

3.4.2 Positive campaigning for exercise

Beyond the health sector, there are further examples of positive action through the establishment of government-led exercise schemes, some initiated at the state and city level. The Agita São Paulo programme was launched in Brazil in 1996 to promote regular physical activity among the 37 million inhabitants of the State of São Paulo. Since its launch, the programme has been implemented throughout Brazil, as well as other countries in Latin America (Matsudo *et al.* 2004). The Agita São Paulo programme targets three main populations: students, workers and the elderly. The aim is to encourage people to adopt an active lifestyle with at least 30 minutes of moderate to vigorous physical activity most days of the week. The programme adopts a multi-sectoral approach, including partnerships with a wide range of organisations. Events organised by the programme involve large numbers of participants and link many ongoing activities with institutional partners (Matsudo *et al.* 2004).

Further evidence of the promotion of physical activity in Brazil involved a municipal law passed in 1998 that established 'healthy streets' in Rio de Janeiro city. This provides a good example of an initiative that could be expanded to other cities. The law allows the traffic to be interrupted during certain hours every day so that people can exercise on public streets with safety wardens provided. Deprived areas of the city where spaces for physical activity are almost non-existent are given the greatest priority (Coitinho, Monteiro and Popkin 2002).

Project GUIA (Guide for Useful Interventions for Physical Activity in Brazil & Latin America) was competitively funded as a special interest project of the Centers for Disease Control and Prevention (CDC)/WHO Collaborating Center for Physical Activity and Health, Prevention Research Centers (PRC) Program. The goal of Project GUIA is to develop evidence-based strategies for promoting physical activity in Brazil and throughout Latin America. The PRC in St Louis (Washington University in St Louis) initiated the project in partnership with CDC's Divisions of Nutrition, Physical Activity and Obesity; and Adult and Community Health, the Federal University of São Paulo (UNIFESP), the Brazilian Ministry of Health (MoH), the Pan American Health Organization (PAHO), the Centro de Estudos do Laboratório de Aptidão Física de São Caetano de Sul (CELAFISCS), and a network of universities and municipalities in Brazil (Pratt *et al.* 2010).

More recently, the Academia da Saude (Health Academy) programme was created in April 2011 and has its foundation based on ongoing municipal experiences throughout Brazil which seem to be effective at increasing frequency of physical activity within various regions including Recife, Aracaju, Belo Horizonte and Vitória (Simoes *et al.* 2009). The programme seeks to eliminate structural barriers to physical activity, such as the lack of public spaces for leisure and to facilitate the formation of healthier habits. This programme is implemented in partnership with municipalities in order to build physical spaces equipped with suitable infrastructure, equipment, and human resources for the guidance of physical and leisure activities. These spaces are required to comply with regional specifications and Brazil's SUS principles and guidelines, strengthening local actions to promote health in the population (MoH 2011).

3.4.3 Civil society initiatives and partnerships

As an integral part of the Strategic Action Plan to Tackle NCDs in Brazil, 2011–2022, the MoH encourages partnerships and agreements with civil society institutions and groups where political mobilisation, awareness, and support for efforts on NCD prevention and control can take place. As a part of health promotion activities within the action plan, partnerships with civil society (family farmers, small associations, and others) are encouraged in order to increase production and access to healthy food. This scheme thus supports cross-sector initiatives with the purpose of increasing the supply of basic and minimally processed foods. The MoH also claims to support partnerships with civil society groups with the purpose of preventing NCD and promoting health, such as through reducing salt and sugar in food (MoH 2011).

Another positive aspect of Brazilian public health is heavy involvement of the mass media and television programmes that have been used intensively by government and international organisations and by civil society to promote healthy behaviours (MoH 2011). For example, a special television channel was established to train elementary school teachers in a broad range of topics. This programme introduced healthy eating and good nutrition in the form of four short videos that have been broadcast every two months, potentially reaching 37 million elementary schoolchildren. Obesity, malnutrition, physical activity and health, food and culture, and food safety are the specific topics covered. Support material was also produced for teachers to help them create new classroom work with the students (Coitinho *et al.* 2002).

Other educational programmes have also been targeted towards working environments, health units and schools, and focused on a wide range of NCD. For example, the National Programme for Tobacco Control and Other Cancer Risk Factors in Schools was developed by the Brazilian National Cancer Institute to inform and educate children in schools about cancer risk factors (Euromonitor International 2013). However, it must be noted that mass media has also been used heavily to advertise unhealthy foods and drinks and aggressively market private insurance.

3.4.4 Government engagement with the private sector

Government regulation of the private sector in Brazil has focused on mandatory food labelling. In addition, the state has engaged with the private sector to ensure the provision of generic low-cost medicines, and to increase health insurance coverage.

In 2001, legislative action mandated that all packaged foods in Brazil list their content in standardised, consumer-friendly tables. This packaged-food information regulation process was constructed with intense participation of the Brazilian academic community and the food industry in a series of workshops. The MoH determined serving sizes and a draft of the regulation was presented to the food industry who then applied this to all packaged food products in Brazil. This has provided a beneficial example of participatory and co-operative processes for nutrition involving government and the private sector (Coitinho *et al.* 2002).

Information on healthy eating may be disregarded if consumers are not advised how to make the best purchases and use of their food budget. Thus, a software program called 'Shop Smart – the best buy' was produced by the MoH in partnership with the University of Campinas, available at supermarkets to help consumers make healthier choices. However, implementation of the Shop Smart software at points of food purchase depends upon the retailer's interest and the MoH has had limited success in approaching some major supermarket chains for future partnership (Coitinho *et al.* 2002).

Government action has also been to the production of generic medicines for popular consumption. In 2004, the MoH established the Farmácia Popular (Popular Drugstore) programme, increasing access to a set of medicines at lower costs. In 2006, the programme was expanded through agreements made with the private sector, through a campaign entitled '*Aqui tem Farmácia Popular*' ('Here is Your Popular Drugstore'). In 2001, through a campaign entitled '*Saúde Não tem Preço*' ('Health is Priceless'), anti-hypertension and diabetes medicines started being broadly provided free of charge. In early 2011, the MoH expanded its Popular Drugstore programme with further drugs to treat other chronic diseases such as asthma, rhinitis, Parkinson's disease, osteoporosis and glaucoma. Drugs were distributed with discounts of up to 90 per cent to nearly 17,500 private registered drugstores throughout Brazil and the programme has become a model for other developing nations (MoH 2011).

A further example of public–private partnerships concerns private health insurance for those who wish to have options beyond the national SUS system. Although Brazil has more than 1,000 health plan providers (ANS 2010), most of these are small and operate at local level. Among the largest companies with national operations, fusions and acquisitions have taken place, which is rapidly leading to concentration in this sector (Ocké-Reis 2007). The number of Brazilians with private insurance rose by more than six million from 2002 to 2008, although the proportion of the population covered has remained at around 20–25 per cent (Paim *et al.* 2007). As the middle class grows in Brazil, it is expected that there will be a boom in private insurance industry. The cost of insurance is increasing well above inflation rates and some diseases are also not covered, which is a serious cause for concern (Victoria *et al.* 2011). As it is a universal public health provider, the SUS will treat private patients with complex conditions that are not covered by their insurance. Bahia (2009) argues that this is a highly regressive policy that undermines funding for the SUS. Although progress has been made in regulating the private insurance sector, a redefinition of the roles of this sector in relation to the SUS has been recommended with stronger regulation in order to minimise competition between sectors and develop methods of reimbursement for patients (Victoria *et al.* 2011).

3.4.5 State fiscal management and investment in NCD

There are insufficient or unreliable sources to track government investment on NCD in Brazil; however, research funding has been used as a proxy for government investment. A review of NCD studies funded by the MoH Department of Science and Technology (DECIT) within the context of Brazil's epidemiologic transition was conducted by Moura and colleagues (2012). Among all NCD projects, cancer was the research theme most supported by DECIT in terms of resource allocation and number of projects. Other than cancer, the three most common subjects were hypertension, NCD in general, and CVD (by resource allocation), and diabetes, hypertension, and NCD risk factors (by number of projects). Analysing research themes by region, allocated resources favoured CVD in the north; cancer in the north-east, mid-west and south-east; and diabetes in the south. In terms of funding, DECIT's largest investment (US\$82 million from 2002–09) went to cancer research across all regions as compared to US\$4.6 million for the study of obesity. Across all regions, DECIT funding for NCD research was greatest in the south-east, even when considered in proportion to population size (Moura *et al.* 2012).

Arretche (2002) argues that sub-national resource constraints in combination with increased discretion over spending decisions incentivise governors and mayors to target their budgets toward the most politically popular social programmes. Democratic accountability is weak at the state level because state legislatures have little control over governors and also because citizens are largely unaware of states' policy responsibilities (Abrucio 1998; Souza 1997; Samuels and Abrucio 2000). Additionally, the efficiency of service provision is often low, in part because governors and mayors lack political incentives to coordinate their public service programmes, with corruption and foot-dragging commonplace at the state and local levels (World Bank 2007; Fenwick 2009).

3.4.6 Governance lessons from Brazil

The following points can be drawn from the Brazil example, with reference also to other contexts:

Engaging with the private sector

Different approaches are pursued by governments in terms of fiscal management with respect to NCD. These range from positive incentives (subsidies) to the taxation of negative factors. In Section 3.3 on the agri-food industry and NCD we discussed different strategies for the regulation of the food industry, including self-regulatory commitments such as under the UK government's responsibility deals. The Brazilian government has engaged actively with the private sector. Public-private partnerships have been pursued with the aim of ensuring the active participation and involvement of the private sector such as the pharmaceutical industry, where the government has negotiated lower costs for drugs. However, in Section 3.1 we discussed some of the concerns that have been expressed in general regarding partnerships with business, and the pharmaceutical industry in particular. Biehl (2007) has raised this concern regarding the 'pharmaceuticalisation' of HIV responses in Brazil. Others point to the lucrative business opportunities which expansion into L&MICs and the large NCD drug market represents for Big Pharma and their shareholders. Katz (2013) argues that cooperation with these industries is being supplemented for binding legislation that focuses more on targeting risk factors and the growing social and economic inequalities especially in L&MICs. Thus, opinions remain divided on the best way to engage the private sector.

An interesting dimension of the Brazilian example, however, is the way in which the government has hosted a multi-stakeholder committee to develop and label contents of all packaged foods. This suggests that different actors, including the food industry, government health and agricultural officials, academics and researchers, and the private sector, can collaborate in initiatives such as to establish serving sizes as well as the listing of foods' content in consumer-friendly tables, which can then be formalised in legislation. The rationale is that such a system can give stakeholders greater ownership over the process and catalyse commitment to transparent food processing.

Catalysing investment in social sector programmes

It is assumed that elected politicians want to maximise the returns of their work at the ballot box. In general, investment in social sector programmes such as public health and education is considered to be low in visibility, translating into minimal returns for politicians at the ballot box. The challenge is to design social sector programmes that entice elected political elites to invest in NCD prevention whilst also advancing their electoral interests. In Brazil, the political unrest in 2013 might also suggest that the electorate want greater public sector investment and that a rising middle class is demanding better quality government service provision. One could thus argue that it would be politically astute to foresee and plan for the health and social care demands and cost of a rising burden of NCD in Brazil, and in other countries facing similar challenges.

The offer of international resources lowers the costs of investing in social sector programmes to politicians who are looking to distribute their limited pool of funds according to the most politically advantageous option. Particularly, in a context of economic fiscal austerity, when national policymakers are forced to make painful public sector cutbacks, the offer of international financial assistance – through either loans or grants – can strongly encourage national investment in an ailing social sector programme. International donor funding can thus constitute a strong political incentive for governments to invest in high-profile social sector programmes when national political leaders are interested in increasing their government's international reputation and credibility, such as has been the case of post-transition Brazil. The challenge is to merge both national and international political will, and increase political commitment to invest in the health sector in a transparent and accountable manner. The experience of AIDS and TB policy sectors in Brazil suggests that international loan agreements can encourage a wave of bureaucratic development (Rich and Gómez 2012). What is less known is whether politicians become more responsive to their voters when politicians are largely funded by – accountable to – external donors.

Coordinating a multi-sectoral response to NCD

The Brazilian experience suggests that a key aspect of the 2011–2022 Strategic Action Plan to Tackle NCDs has been the encouragement of partnerships and agreements with civil society institutions. The media and television programmes can also play a significant role to promote healthy behaviours and food. If one looks beyond nutrition-related NCD, a positive example of civil society involvement in Brazil can be seen in the process to ratify the Framework Convention on Tobacco Control, under heavy scrutiny from the tobacco industry and its allies. In this case, the combined work of the Ministry of Health, social activists and civil society organisations such as the Brazilian Society of Pulmonology and Physiology was crucial to support the ratification. This coordinated response across civil society and media to the risks of tobacco use could provide a useful framework for how best to proceed and engage on NCD issues in future. The Brazilian example suggests that it is important to articulate a common and coordinated message about responding to NCD that involves multiple stakeholders, including civil society and the media. Globally there has been limited coordination evident in terms of civil society mobilisation across the spectrum of diseases, although many disease-specific NCD organisations exist. A notable example of a broader network is the NCD Alliance – a network of over 2,000 organisations representing the four main NCDs outlined in WHO's 2008–2013 Action Plan for the Global Strategy for the Prevention and Control of Noncommunicable Diseases – CVD, diabetes, cancer, and chronic respiratory disease. Activities include producing the latest policy work on NCD, building the evidence base, convening expert working groups on a range of topics, and pressing governments to recognise that NCD is a global development priority requiring urgent response.

4 Conclusion: future policy pathways

The 25 by 25 goal of the World Health Assembly sets the aim of reducing avoidable mortality from NCD by 25 per cent by 2025. More recently, prompted by the twentieth anniversary of the 1993 World Development Report, the Lancet Commission on Investing in Health has proposed several strategies for preventing NCD by national governments of L&MICs and by the international community by 2035. These include the following actions (Jamison *et al.* 2013):

- heavily taxing tobacco and other harmful products, reducing subsidies on items such as fossil fuels and redirecting finances towards NCD control
- strengthening health systems to deliver packages of cost effective clinical interventions
- provision of technical assistance on fiscal policies
- moving towards universal health coverage
- financing population, policy and implementation research on scaling up of interventions.

This report is aimed to critically assess these existing goals and proposals for responses to the burden of NCD, particularly with reference to nutrition-related NCD in L&MICs. We have done so by adopting a perspective that assumes that NCD is a development problem, and that thinking from within development studies can contribute to the debates about policy responses to NCD. This endeavour to consider development-informed policy options has not ignored public health evidence, but has drawn on a wider range of literature and evidence from our respective fields within development studies. This has thus been an exercise in integrating a range of evidence and policy-related experience and critique. The tools for this exercise have been drawn from Foresight methodology. We have argued that the interaction between NCD and poverty is complex but significant and that it cannot simply be asserted that these illnesses are not ‘diseases of poverty’. Furthermore, these conditions warrant attention and funding from development sources to strengthen responses sooner rather than later, on account of the projections of the health and social care costs associated with a rising burden of disease. To the 25 by 25 goal we would add the need to reduce early mortality and disability from these diseases in L&MICs. It is this feature of NCD in L&MICs especially that can have a devastating impoverishing effect on households, in conjunction with an absence of health insurance or social protection provisions.

With respect to the specific interventions suggested by the 2013 Lancet Commission, we would agree with the goals of health systems strengthening and universal health coverage, as well as the need for more implementation-oriented research that can inform scaling up agendas, with experience gained from learning by doing. It is also clear that more research evidence is needed to inform the distribution of resources and health systems interventions, including more context-specific and regional research and surveillance data. There are also still gaps in evidence on the rural–urban distribution of the NCD burden, and the distribution according to wealth quintiles in L&MICs. The Lancet Commission review acknowledges the fiscal challenges of planning a response to the NCD burden, and comes out in favour of ‘sin taxes’ as a source of revenue to fund responses. Our report joins other scholars to strike a cautionary note on punitive measures that might in fact affect poor people the most.

This points to a key normative principle that we have employed in assessing policy for NCD, namely to consider particularly the effect of different responses on poor people, and to ask the question of who gains and who loses when particular policy pathways are pursued. In the section on health systems, we draw attention to the interests that stand to gain from a heavily

medicalised response, and offer a critical view of disease self-management that stresses the importance of considering plural health markets and the structural factors that inhibit individuals' agency in terms of lifestyle change to reduce risk factors of disease. We argue that the state needs to explore partnerships with other actors to support disease self-management, including community-based support structures and (adequately trained and supported) community health workers. In the section on social protection, a framework is proposed that conceptualises social protection strategies that can also assist in disease prevention and health promotion, such as school feeding programmes. We caution against seeing social protection only in terms of cash transfers. Whilst there is evidence of cash transfers being used to promote preventative health actions and address undernutrition, the use of such options to 'nudge' towards positive behaviours, particularly through punitive measures, should be approached with caution. Adequate health insurance and social protection can help households mitigate the effects of an NCD, but other barriers such as transport and access to health information (and not only the cost of care) affect health-seeking. A case is made for the integration of health and social protection with a strong focus on ensuring that those who routinely fall through the cracks also get access to such measures. The use of community health and care workers has been seen as one way to enhance such integration. However, we argue that there are limits to using volunteer workers in particular, and adequate training and support is important to address concerns about quality of care.

The debates about the best ways for governments to engage with the food industry are complex and whilst there is evidence that L&MIC governments are moving towards different forms of regulation, the measures vary. Evidence suggests that companies are also smart at substitution to evade taxes and at rebranding reformulated products as healthy options. A pessimistic assessment is that the regulatory responses of governments are small compared to the tide of changing approaches to food marketing and consumer choice to opt for less healthy food options. Some would argue that confrontational regulatory approaches have their limitations and that a case could be made for positive engagement with the food industry and 'win-win' collaborations and constructive partnerships, where the business industry is assisted to make a positive contribution to health. Nonetheless, strong political will appears to be required to achieve a definitive response in governance terms to the NCD challenge. The need for government action has to be clearly articulated and responses that involve alliances between multiple actors appear to have some efficacy, including government ministries, researchers, the private sector, the media and civil society. A concerted and united civil society mobilisation has not been a feature of the NCD response globally and this is a striking difference compared to other well-coordinated and successful global campaigns, for example with respect to HIV. It is important to consider how civil society can be engaged in advocating for policy levers that will benefit poor people in L&MICs who are confronted by the challenges of living with an NCD in such contexts. The issue of NCD has also not mobilised anything like the resources that were allocated for HIV.

In conclusion, we would argue that to get anywhere near to achieving the 25 by 25 goal will require a set of responses that go far beyond the narrower remit of public health responses and address also the development concerns raised by the burden of NCD in L&MICs. The importance of a multi-sectoral approach seems clear. A framework is necessary that conceptualises the food health system as connected and addresses the need to make quality and affordable processed food available to the increasing numbers of people who are living in the urban areas of the world. Such a framework should also explore inter-sectoral linkages with health and social protection programmes through measures such as feeding programmes, and health promotion. Responses need to consider carefully the balance of responsibility for action, so that individual agency is balanced by state support, albeit in partnership with other actors if necessary. We need to maintain a realistic sense of future scenarios and continually revisit our assessments of the kinds of worlds we are designing interventions for. Future policy pathways will be strengthened by incorporating a wider range

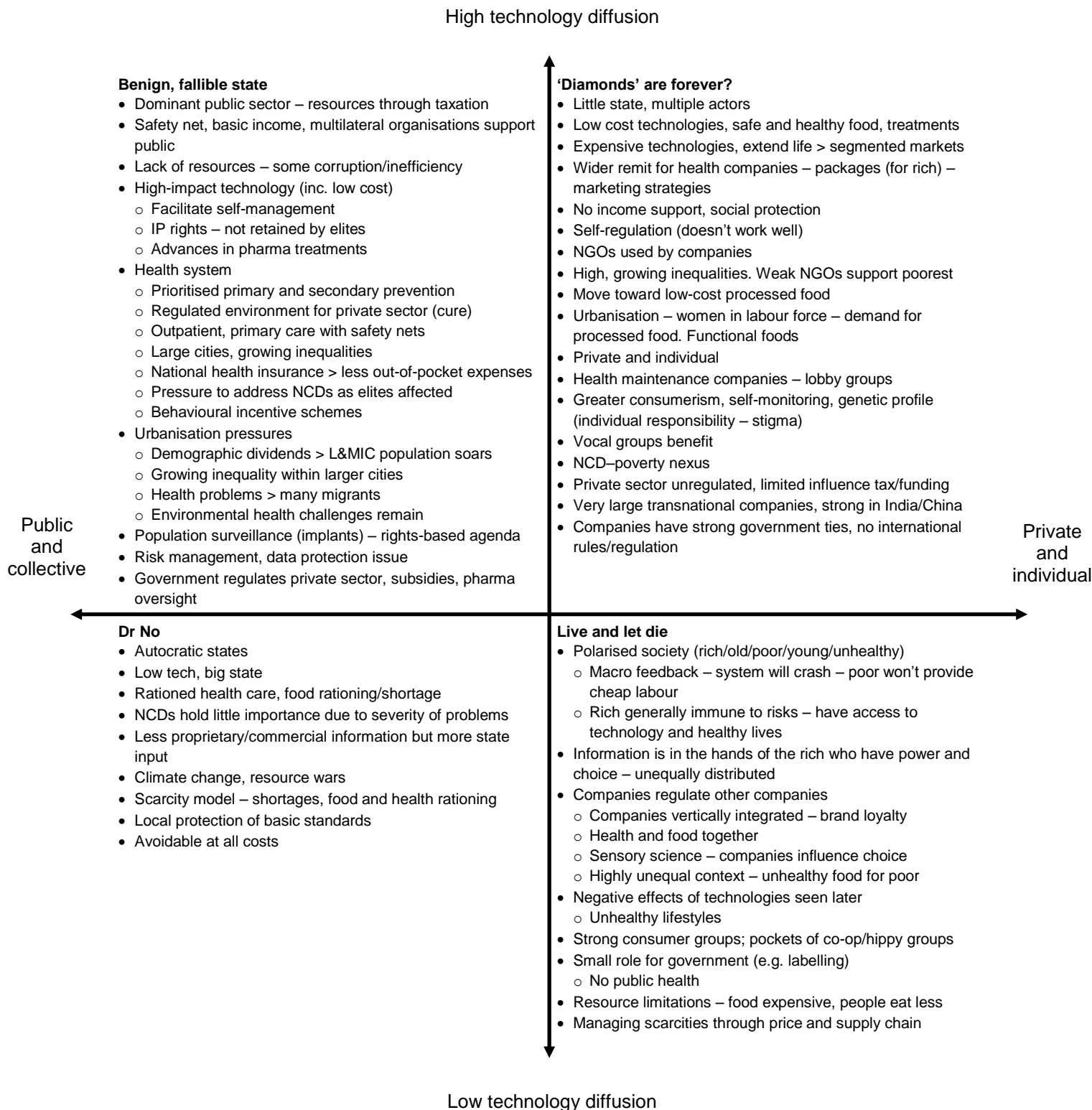
of collective experience and evidence, and the development of responses is likely to require pragmatic thinking that still aspires to reduce the burden of poverty and suffering that these diseases can bring.

Annexes

Annex 1 Drivers of disease: STEEP analysis

Society	Technology	Economic	Environment	Politics
<ul style="list-style-type: none"> • Participation of women in labour force • Family structure • Public perceptions, attitudes towards NCDs and dietary risk (overweight = healthy) • Public knowledge about food, diet, health (meat = healthy) • Attitudes to exercise, exercise culture (women) • Self-management of illness (lay health workers) • Community relations, social cohesion • Social ‘gradients’ in disease distribution • Perception of NCD sufferers (stigma) • Aspiration of modernity • Food consumption patterns, dietary habits • Consumerism • Individualism • Urbanisation (unregulated) (mental health impacts) 	<ul style="list-style-type: none"> • Developments in food tech, sensory science • Food tech (lower GIs, sugar removal) • New pharma treatments – moral hazard • Genomics – cost • ICTs for health knowledge, social organisation • Vaccines against viruses associated with NCDs in later life • Biotech – live longer with chronic disease? Epigenetics • Medical treatments for obesity • Mobile monitoring tech • Machinery to do work (robots) • Body part replacement 	<ul style="list-style-type: none"> • Relative price of food • Higher demand, higher prices for basic products • Undernutrition (antenatal impact) • Retailers compete on basis of nutrition or price • Economic growth • Loss of productivity due to NCDs • Income/inequality levels in L&MICs • Growth of BRICS • Redistribution of income/wealth to L&MICs • Consumption patterns (stratified?) • Cost of medical interventions (multi-tier systems) • Urban jobs (unhealthy) • Allocation of funds CDs vs NCDs • Cost of chronic disease 	<ul style="list-style-type: none"> • Coverage of food in media – ways food is promoted • Climate change • Toxins in food, water, environment (new diseases) • Intensification of animal husbandry (hormones) • Agri systems (processed) • Zoonoses • Land use (biofuels) and land grabs • Access to ‘global spaces’ & food/medicine in L&MICs and HICs • Safe recreation spaces • Shifts in agri production • Urbanisation, slums • Availability of healthy food in peri-urban environment • Narrow focus on food safety (environmental health) • Radiation exposure • Machinery – pollution (canned fresh air) 	<ul style="list-style-type: none"> • Burden of ageing population • Food subsidies • Government role in pricing commodities (food) • Taxation of foods that cause NCDs • Governments see role to keep population healthy • Regulation of pharma • Food/pharma lobbies • Emergence of consumer organisations focused on food • Role of large corps in national and global governance • Trust in government and corporations • Use of agri/trade policy to promote health diets • Nanny state vs nudge • Steward role of government • New social, political structures (new CSRs?) • Densely populated cities (municipal politics) • Growth of municipal power • Visibility, importance of NCDs (‘lifestyle’, risk)

Annex 2 The scenarios



Annex 3 Wind tunnelling

Policy	BFS	Scenario		
		DAF	LALD	DR NO
Brazil – Family Support Programme (state driven) <ul style="list-style-type: none"> • self-management • community health, outreach 	√	<ul style="list-style-type: none"> • Facilitated by companies • State run and CHW for poor • Rotating credit 	<ul style="list-style-type: none"> • Would not work unless very basic • Informal providers become suppliers of drugs • Post-conflict countries have all produced some sort of community support programmes • States must do something to avoid revolution 	<ul style="list-style-type: none"> • Part of a basic survival package that external providers supply
Cambodia – Community-level service/insurance <ul style="list-style-type: none"> • combine interventions 	<ul style="list-style-type: none"> • Some level of community organisation • accountability from the state • drug access, quality of care 	<ul style="list-style-type: none"> • Space for it • Various sources of ownership 	<ul style="list-style-type: none"> • Scale – more disparate, niche, isolated 	√ <ul style="list-style-type: none"> • Not tolerated due to people taking control, lack of organisation
China – Responsibility (state driven) <ul style="list-style-type: none"> • monitoring/surveillance • village doctor 	√ Very high	<ul style="list-style-type: none"> • Health care market collapses due to predictable risk 	<ul style="list-style-type: none"> • Less likely as no one will care, sick will die 	<ul style="list-style-type: none"> • One of the few interventions possible
Mexico – Oportunidades CCT programme piggy backing on existing income support <ul style="list-style-type: none"> • Brazil is penalty or incentive-based 	√ <ul style="list-style-type: none"> • State-run coordination • Internalised 	<ul style="list-style-type: none"> • Weak states, less actors • Only if companies were integrating acute hospital care and nursing home care • Outsourcing • Accessing insurance mainly from the formal sector – inequality of access • Limited access to more expensive technologies for prolonging life 	<ul style="list-style-type: none"> • Driven by a good insurance system or government • Intensify 	<ul style="list-style-type: none"> • Maybe not • Government would find it difficult to justify • Government control without benefits

(Annex 3 cont'd.)

		Scenario		
Policy	BFS	DAF	LALD	DR NO
Fortification <ul style="list-style-type: none"> • composition of foods (e.g. salt) • legal limits/banning • public/private • private • taxes 	✓ <ul style="list-style-type: none"> • State relies on companies to produce foods 	✓ <ul style="list-style-type: none"> • Negotiated with companies • Completely removing certain foods • Political strategy within companies 	Less	Yes, but not intentional
Consumption <ul style="list-style-type: none"> • taxes/price control • information • price controls 	✓ <ul style="list-style-type: none"> • Taking taxes from mining and redistributing 	<ul style="list-style-type: none"> • Less tax • More information 	<ul style="list-style-type: none"> • Taxing the rich 	<ul style="list-style-type: none"> • Price controls may not be done while considering health outcomes
Ensure better access to quality processed foods	✓	✓ <ul style="list-style-type: none"> • Elite • Private sector innovation • R&D 	<ul style="list-style-type: none"> • Alternative for poor? • Feeding the workforce • Cost of tech needed to produce food • Food may not be readily available 	<ul style="list-style-type: none"> • Not really
Restrict marketing to children	✓ <ul style="list-style-type: none"> • Restricting advertising during children's TV programmes • State-funded school physical activity programmes 	<ul style="list-style-type: none"> • CSR • Demand shift • Wealthy will send their children to private schools 		

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